JOURNAL
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AMERICAN VETERINARY MEDICAL ASSOCIATION

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AVMA ☆ Report

Veterinary Medical Activities

◆ The Executive Board has selected August 21 to 24 as the dates for the 1950 AVMA Convention in Miami Beach. Mark these dates on your new calendar and plan to attend. The convention program will review advancements being made in veterinary medicine.

★ ★ ★

◆ President-Elect W. M. Coffee, attending the Kentucky Short Course for graduate veterinarians sponsored by the Animal Pathology Department, Kentucky Experiment Station, Lexington, on Dec. 7 to 8, 1949, showed motion pictures of his clinic and talked about AVMA activities.

★ ★ ★

◆ The Research Council met in Chicago on Nov. 27, 1949, for an all-day session to discuss the general status of veterinary medical research, the AVMA research fellowships, and the need for building up the Research Fund in view of current fellowship commitments. Plans for, and a program of, rebuilding and enlarging the Research Fund are being developed by the Research Fund Finance Committee appointed by President Zepp.

★ ★ ★

◆ The Executive Board voted to have the Convention program committee plan for, and the editorial staff prepare, a book which will include the complete proceedings of the Eighty-Seventh Annual Meeting in Miami Beach. This book will contain the deliberations of the House of Representatives, the actions of the general sessions, and the scientific papers presented, together with the discussions which followed.

★ ★ ★

◆ The program committee for the Miami Beach convention is well on the way to outlining its objectives. It is not too late, however, to inform the committee of projects which should be reported, nor to offer to present a report of such a project.

★ ★ ★

◆ Delivery of JOURNALS is always a problem. Every month, a number of copies are returned to us because of change of address. This means that a number of members failed to receive the JOURNAL, and it also means extra postage to bring them back to us and eventually to send them to the correct address. The United States Post Office suggests that changes of address be filed promptly with the postmaster and with us.

★ ★ ★

◆ The Council on Education met in Chicago, Nov. 27, 1949, to discuss the status of the schools of veterinary medicine, the revision of the minimum essentials of an acceptable school, the method and rate of inspection of the several schools, and other problems within the scope of its work. They devoted the full day to this meeting.

★ ★ ★

◆ The Executive Board has authorized the Convention program committee to activate a plan for recognizing persons and schools presenting scientific exhibits at AVMA Conventions, which will be put into effect at the Miami Beach meeting. Recognition will be in the form of awards based upon excellence of presentation, but the precise basis for, and type of, award has not yet been determined. An official announcement will be made later.

★ ★ ★

◆ The panels depicting the work done by veterinarians were on display at the National Farm Show in Chicago, Nov. 28 to Dec. 3, 1949; and at the meeting of workers in the West Virginia Department of Agriculture, at Charleston, Dec. 13 to 16, 1949.

★ ★ ★

◆ Director of Public Relations C. D. Van Houweling represented the AVMA and discussed its activities with members of the Southern Illinois Veterinary Medical Association when they met at Centralia on Dec. 7, 1949.

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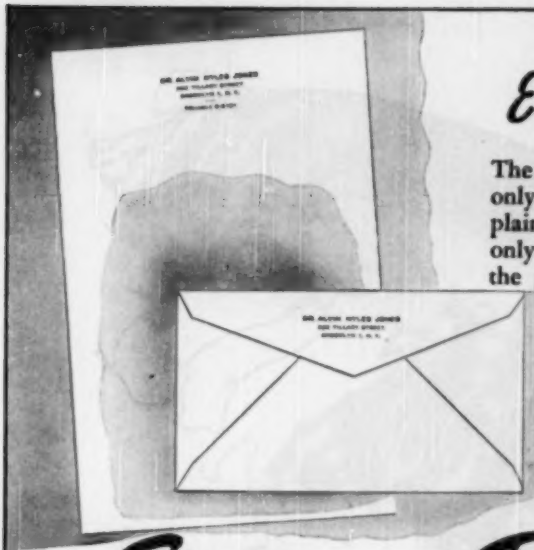

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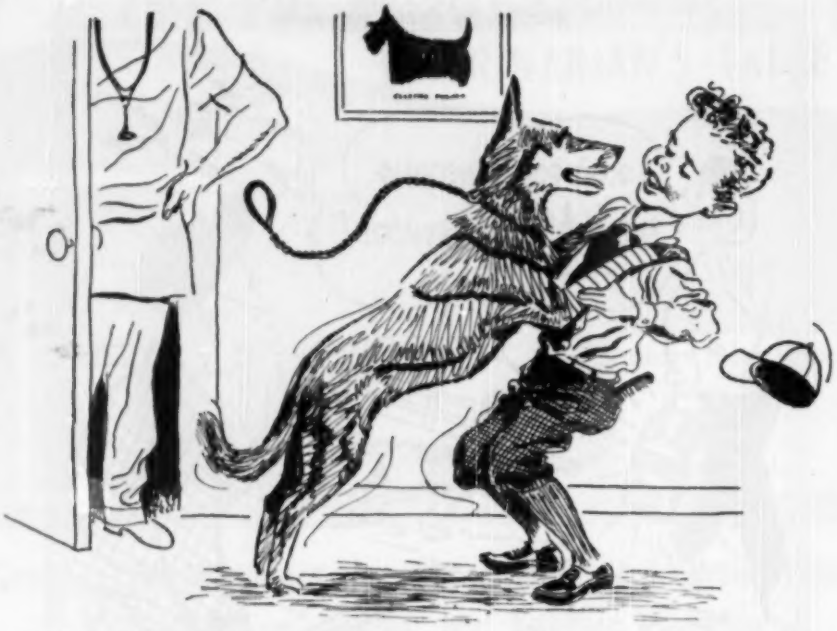

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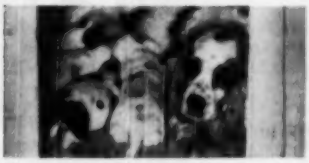
No. 1

DOG RESEARCH NEWS

Intestinal Roundworm Control in Dogs

Recently acquired knowledge on the control and elimination of intestinal roundworms in dogs is contained in a recent bulletin issued by Friskies Research Kennels. Write today, if you'd like a copy.

Meanwhile, remember it is easier to *prevent* intestinal roundworm in the first place. Here are three steps to follow in protecting puppies from infestation:



1. Clip the belly of the bitch ten days prior to whelping.

2. Then thoroughly wash her.

3. Confine her, and her pups, in a clean environment until puppies are weaned.

Debilitated puppies, suffering from malnutrition, are most susceptible to ascarid infestation. Experiments with chickens at the University of Ohio showed that a low vitamin A or vitamin D intake increases the susceptibility of chicks to ascarids. These experiments also showed that pullets at 3 months were relatively resistant, and at 6 months were quite generally resistant to infestation, unless debilitated from other diseases or nutritional deficiency.

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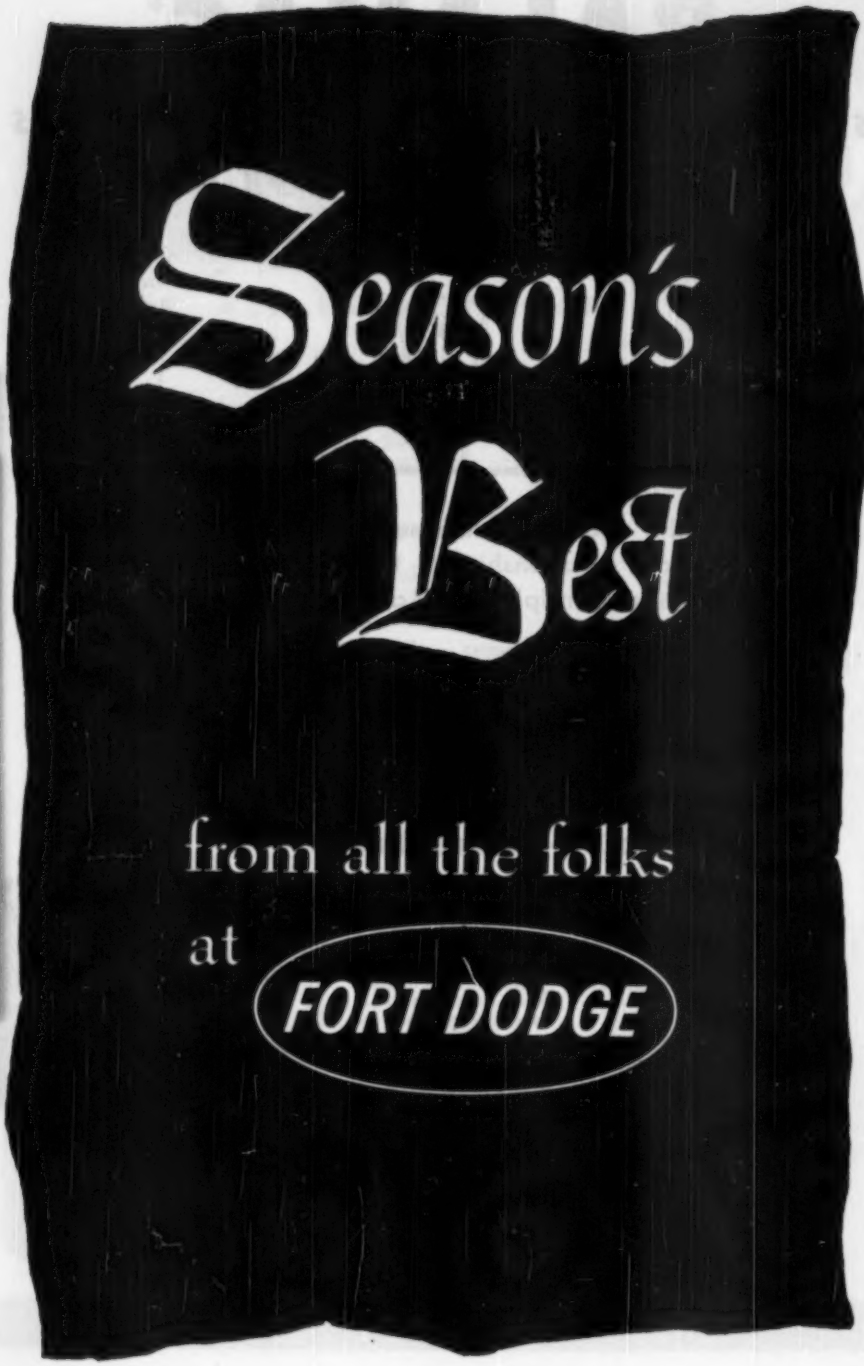
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Journal
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As Others See Us

Following is a résumé of the symposium, "As Others See Us," presented at the Tuesday evening General Session of the Eighty-sixth Annual Meeting of the American Veterinary Medical Association in Detroit, July 11-14, 1949. The participants were Mr. J. G. Hays, East Lansing, Mich., moderator; Miss Sarah Van Hoosen Jones, Rochester, Mich.; Messrs. S. R. Guard, Louisville, Ky.; C. F. Huffman, East Lansing, Mich.; C. S. Rhode, Urbana, Ill.; C. G. Teeter, Royal Oak, Mich.; and Victor Beal, Stanton, Mich.

J. G. Hays, dairy specialist, Michigan State College, East Lansing, presided as moderator of the symposium, and gave his inimitable analysis on the mistakes which have been made in designing the dairy cow, and the procedures by which these errors might be corrected, at least in some degree. Far from being a dry, uninteresting discourse on the proper type for dairy cows, it caricatured most of the important items on the score card. At every step of the remodeling job, there were illustrative stories to emphasize the need for certain changes. The whole story is one which must be heard, it cannot be appreciated when read. Therefore, we will make no attempt to repeat the remarks of Professor Hays, except in his introduction of the members of the symposium.

In introducing Miss Sarah Van Hoosen Jones, he called attention to her listing as a farmer, but added that she has accomplishments in other directions. Scholastically, she has traveled far, and she is an important member of the Michigan State Board of Agriculture.

Dr. C. F. Huffman was introduced as a nutritionist, a professor, and a research worker. Familiarly known as "Shorty" Huffman in the livestock and veterinary medical fields, his work on rumen digestion and on cobalt deficiency has been especially prominent in recent years.

Mr. C. G. Teeter was presented as a dog fancier and a kennel club official. His many years of activity along these lines have given him a wide and varied contact with veterinarians and with their dog-owning clients.

Professor C. S. Rhode, universally called "Dusty," was introduced as extension professor of animal husbandry at the University of Illinois, and as an outstanding judge of dairy cattle. His contacts with practicing veterinarians have been intimate, because economical dairy production depends upon good herd health.

Mr. Victor Beal was called upon as a county agricultural agent, the man in constant contact with the practicing veterinarian, and with direct knowledge of relations between the veterinarian and his livestock-owning client. His work demands that he know about the animals, their health, their feeding, and the soil on which the feed is grown.

Mr. S. R. Guard was presented as editor of *Breeder's Gazette* and as spokesman for the editors of journals engaged in fostering a livestock economy as the basis of a permanent agriculture. His analysis of the relationship between the veterinarian and his client complete the symposium.

• • •

Miss Sarah Van Hoosen Jones, farmer, Rochester, Mich., spoke about her early experiences with veterinarians. Having been raised in a doctor's family, she drew some interesting comparisons. For example, the first veterinarian she recalls was truly a "horse doctor." His chief occupation in later years was watchman at the railroad crossing.

Miss Jones recalled the first animal medication of which she was aware—a wonderful bottle about 6 in. square, with broad heavy shoulders to collect dust, and a long Plymouth Rock wing quill fitted through a cork. The bottle contained a carbolic acid mixture, and this material was used freely

and assiduously on cuts and abrasions of all types. Notably, it was used on a wire cut which opened the hock joint of a horse. The joint was completely stiffened (ankylosed), but the horse lived.

Next, came an experience as a student of Dr. A. S. Alexander at the University of Wisconsin. The course was strictly a lecture series, but was kept reasonably practical despite the absence of animals. The treatment of animals was largely administration of medicine. There were no diagnostic tests, no surgery, and little preventive medicine.

This was followed by an experience with a small animal hospital in Chicago, where a sick dog was taken for attention. This was somewhat of an approach to the human medical practice, and it came as a revelation to know that, even in those days, several of these hospitals were thriving in Chicago.

About 1925, upon return to the farm, a veterinarian was called to assist a purebred Holstein-Friesian heifer unable to deliver her first calf. Instead of examination, and correction of presentation, there was simply a display of brute strength by all the men who had assembled in the barn. The heifer died. The veterinarian's services were not resolicited.

Then the curtain rose, and the miracle occurred. A younger man was called for some calf problems, and it developed that he could, and did, make examinations for pregnancy. Moreover, in his work around the animals he wore a white cloak that was washable and always asked for a pail of warm water and soap with which to scrub. To one who had been raised in a doctor's family, the veterinarian had assumed a much more important position. This man had a splendid background, he was well trained, and instinctively, it seemed, he was able to determine the cause of trouble and to correct it. (Actually, he was probably using some of the diagnostic skills developed by his improved training.)

When he was called to his reward, he was succeeded by a younger man of the same general type, but with a still better training; in fact, a training comparable to a medical education. This man still serves the farm and its livestock, and he uses the newer information as soon as it may safely be applied to other than experimental animals.

Miss Jones expressed the belief that at least 25 per cent of the success of a livestock owner is determined by the type of veterinarian available to him. The modern veterinarian has at his command the diagnostic aids, the therapeutic agents, and the surgical instruments necessary to maintain animal health at a high economic level. He who uses these aids is a great asset to his clients.

SUMMARY

A word of warning was issued in conclusion, a warning that the emphasis on technical training be not carried to the point where it excludes or minimizes the practical application of this technical knowledge. This is particularly hazardous with the city-raised boy who does not have a farm background and, hence, a more basic knowledge of animals.

The importance of nutrition should be stressed, for upon complete nutrition depends success and health. This is especially true in the raising of young animals, which are to be the parents of the succeeding generations.

The outlook for the future is bright. As knowledge is gained of the physiologic processes by which growth and production are achieved, it is possible to select animals of greater productive ability. As knowledge of proper nutrition is acquired and applied, these selected animals can develop an even higher degree of efficiency. And, as knowledge of disease control, prevention, and eradication is disseminated to the progressive owners of these better animals, the veterinarian will find more and more demand for his services in the application of this knowledge to the specific needs of individual herds and animals.

• • •

C. F. Huffman, professor in the Department of Dairy Husbandry, Michigan State College, East Lansing, expressed the opinion that it is not necessary to keep adding a year to the curriculum every now and then. He suggests that the better way to improve education is by eliminating the unnecessary items from the curriculum. If each professor would carefully analyze each lecture he delivers and delete the obsolete statements and beliefs, he could keep adding the new findings and the new applications of these findings without extending the course. He contended that the new six-year curriculum has not improved the veterinary medical portion of the course, but has amplified the fundamental or basic subjects. Speaking as a research worker, he believes that it is undesirable, if not impossible, to train all students in veterinary medicine to be practitioners and also research workers. He believes, further, that adding one, two, or three years of preveterinary college training does not enhance the possibility of the veterinarian becoming a more successful practitioner than the graduates of recent years.

Much more fundamental is the need for a clear and complete understanding of everyday animal husbandry. The boy who was raised on a farm recognizes and applies much of this knowledge in making his daily calls, prescribing treatment and recommending measures which will prevent spread and avoid recurrence of diseases. Frequently, he does this as second nature, and without conscious analysis of the problem, but the practicality of such observations is recognized and appreciated by the animal owner, and such recommendations elevate the veterinarian in the esteem of the client. If the primary function of the veterinary medical profession and of the AVMA, itself, are to serve the livestock industry, then the curriculum should be retained at, or returned to, five years, by omitting the obsolete and substituting the up-to-date.

As an example, one term is allotted to animal nutrition. And yet, in that one term the student is expected to correlate what he has learned in chemistry, physiology, bacteriology, and pathology in terms of what the efficiency of digestion, the adequacy of the ration, and the management factors which improve or interfere with normal growth, production, and reproduction may mean to the client.

SUMMARY

To achieve the end of graduating students who will serve the livestock industry to the best advantage, Professor Huffman suggested that the curriculum committee of every veterinary college number among its members a few practitioners. These men would help to select students with the type of background which would recognize and appreciate the problems of feeding and management inherent in all animal diseases, and they would maintain a proper perspective or balance between "a dog-gone good training in veterinary medicine and in animal husbandry."

He further suggested that, by trimming out the obsolete and the elementary items

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which are no longer useful, the curriculum could be maintained at a five-year level without sacrificing any of the newer information as it becomes available. This would, of necessity, mean that the graduate wishing to qualify in a special field or in a particular line of work would be required to spend an extra year or two in completing this specialized training. Nevertheless, the knowledge of animal husbandry and of the problems of practice would form an excellent foundation upon which to build a specialty.

• • •

C. G. Teeter, Royal Oak, Mich., of the Detroit Kennel Club, analyzed the problem from the point of view of a kennel club official and a dog fancier. He opened his remarks with the statement: "Most of the veterinarians with whom I am acquainted do not know anything about dogs." Then he hastened to add, that they certainly knew about the ailments of dogs, the proper methods of treatment, and the newest surgical methods; but they do not know enough about dogs themselves—the breed characteristics, the temperaments, and the little likes and dislikes which often spell the difference between getting along with dogs and their owners, or being at variance with them on one or more points.

Improvement in relations results promptly when the veterinarian considers the dog as a cherished member of the family, instead of as a piece of furniture or a number in the case record files.

In his experience, Mr. Teeter reported that veterinarians are reluctant to admit that they do not have a ready answer for every question, or an accurate diagnosis for every ailment. By being candid with the client, and admitting the limits of knowledge, there is no loss of respect when it becomes necessary that at a certain point factual knowledge ceases and conjecture begins.

The dog shows sponsored by the American Kennel Club provide contacts with many veterinarians, because it is required that every dog entered in an AKC show be examined upon arrival by a duly authorized veterinarian. Sometimes, arrangements are made directly between the kennel club and the individual veterinarian. At other times, a group of veterinarians, or the members of a veterinary medical association, agree to provide the entry inspection service. Letters received from exhibitors indicate that most of them appreciate the service and advice of the veterinarian, but some report that the examiner was uncooperative or arbitrary in his rulings, or interested only in finishing his work and getting away. The veterinarians who have favorably impressed the exhibitors have simultaneously encouraged further consultation in time of need.

The relationship between the practicing veterinarian and the kennel owner or operator is highly variable. Usually, this is a matter of personalities. When they agree, everything works out to mutual advantage; when they clash, both veterinarian and client lose something. Some kennel owners encourage examination by a veterinarian of all puppies sold. Others discourage such examination in every way possible, even to rendering some of the services personally and gratis. In each community, Mr. Teeter said, this is a problem to be settled between the kennel owner and the local veterinarian, there is no action which can be taken on a national level by either faction. The veterinarian who is selling service should study the likes and dislikes of his clients, while the kennel owner who is selling puppies should know and provide the protection they will need when they enter the new home.

• • •

C. S. Rhode, professor of dairy production extension, University of Illinois, Urbana, reported that the dairymen of Illinois recognize and appreciate the importance of herd health in successful and profitable livestock production. They also recognize and appreciate the importance of the veterinary profession. On both points, he concurred wholeheartedly.

Realizing that such factors as feeding, management, and inheritance are important, none is of greater significance than herd health in determining whether a dairy cow will be a marginal producer (200 lb. butterfat and a return over feed cost of about $90) or will do much better (300 lb. fat, $177 return; 400 lb. fat, $270 return; or 500 lb. fat, $360 profit). The marginal producer is likely to be found in a herd infected with mastitis and/or brucellosis, with heavy calf losses and low breeding efficiency. The success of such a herd depends upon improving herd conditions, in addition to treating diseased animals.

Professor Rhode cited the example of a highly successful Illinois practitioner who always takes time to discuss with the owner the important phases of good management involved in solving the problem. When treating mastitis, he stresses the importance of correct milking procedure, milking infected cows last, using plenty of bedding, having stalls of ample size, and preventing calves from sucking each other. When testing for brucellosis, he mentions the importance of keeping the clean herd clean by buying only negative animals from disease-free herds, or by buying open heifers, and

by avoiding introduction of contaminated material from whatever source.

In the field of artificial insemination, attention of dairymen has been directed to the importance of delayed conception. Never before have they kept records which would disclose to them the cost in production, as well as reproduction, of a delay of one, two, or three heat periods in again getting the cow settled. This has led to a demand for assistance from the practicing veterinarian in achieving and maintaining a regular breeding program, with a calf each year for every cow. The practitioners who have been able to make pregnancy examinations and institute the treatment necessary to insure a healthy reproductive tract at the proper time for service, have been appreciated and have been well compensated for their work. Those veterinarians who have been unable or unwilling to render such service have retarded progress in improving the breeding efficiency of dairy herds.

The veterinarian engaged in general practice needs distinctive qualifications. First of all, a farm background provides a fundamental knowledge of livestock husbandry which instinctively or automatically spots and corrects the errors of feeding and management which underlie the immediate disease problem. Then, patience is a virtue without equal. It enables the veterinarian to explain in meticulous detail those factors which he recognizes to be important, realizing that this may be the first time the client has been aware that such a factor exists and has a bearing on the case. Also, the veterinarian must recognize that correction and prevention of disease are herd problems. Unless he makes it clear to the client that he appreciates this fact he may be accused of rushing in to "give a shot," or administer a capsule with a balling gun, and then rushing out again without discussing danger of spread and need for isolation. Next, the practicing veterinarian must be 100 per cent coöperative. The particular problem he deals with during any one hour of the day may represent the difference between earning a fair wage or losing money to the client. Unless each case can be approached and treated on that basis, he will be considered unsympathetic, disinterested, or downright mercenary—concerned only about the fee. And finally, the veterinarian must be well informed. This means that not only must he have a complete training before receiving his license, but he must also keep up to date through the years. The livestock journals publish many items on new developments and treatments. Unless the practitioner reads as many of these as his informed clients, he is in danger of losing ground in his community. The results of research are being reported, and many of the releases are read by livestock owners. Sometimes, the interpretation is not accurate, or the understanding is not complete. In those circumstances, the practitioner must know enough about them to clarify the interpretation and to apply the conclusions to his own community and to the herd of each individual client.

SUMMARY

In closing, Professor Rhode repeated that, in most communities of Illinois, the local practicing veterinarian and the veterinary profession are highly regarded and deeply appreciated. This recognition has been achieved by understanding and appreciating the problems of herd health and its importance to profitable livestock management. It has been maintained by listening patiently to the doubts of the livestock owner and then explaining in detail the sound approach to a corrective program. It will be improved whenever there is complete coöperation with the livestock owner, and on the veterinarian's terms when he can show the value of following his recommendations.

In those communities where friction occurs between the veterinarian and his clients, the veterinarian should analyze the situation impartially. If only personalities are concerned, the friction should be occasional, unless it is his own personality. If his approach to the livestock-health problems of the community has not been acceptable, well, the animal owners are paying the bill and they will spend their money as they see fit.

• • •

Victor Beal, Stanton, Mich., Montcalm County Agricultural Agent, drew attention to the fact that veterinarians everywhere have numerous contacts with county agricultural agents. These occur particularly in the disease-eradication programs, in which the educational work is left to the extension service and the field work to the veterinarians, practitioners, and state and federal employees.

He called attention to a basic difference in the work of the two groups. The county agricultural agent is a public employee, and his services must be available to all residents of the county. The practicing veterinarian, however, is usually self-employed and receives his remuneration from the fees which he collects. This wide difference sometimes leads to misunderstanding as regards the field in which an individual should be operating.

Mr. Beal commented on the remarks made by Dr. W. A. Hagan when he was president of the AVMA and addressed the

National Association of County Agricultural Agents (JOURNAL, Feb., 1948: 95-98). He recommended, particularly, that the veterinarian visit the county agent occasionally in the office of the latter, because friendly feelings are fostered by such visits. As he put it, "The closer you stand to the mule, the lighter the kick."

In some instances, the county agent actually makes a great deal of work for the veterinarian. For example, in a county where an artificial insemination program had been developed, the local veterinarian reported that he had been called upon for much more work with the reproductive problems of dairy cattle than ever before. He believed this to be due to a greater awareness of losses resulting from lowered reproductive efficiency, which, in turn, was a result of the records necessary for the functioning of the insemination program.

Mr. Beal reported a definite need for veterinarians to encourage livestock owners needing additional drugs and supplies to purchase them from the local veterinarian rather than from the corner drugstore. Such a program would increase the business of the veterinarian and, at the same time, be a real service to livestock owners by improving the health and condition of farm animals.

Altogether too many livestock owners purchase such supplies without a competent diagnosis, thereby spending millions of dollars unnecessarily and lessening the prospect of effective treatment when the veterinarian is called later.

• • •

Sam R. Guard, editor, *Breeder's Gazette*, Louisville, Ky., presented a Nancy Hanks medicine case which has been used by Dr. T. J. Stearns, Louisville, ever since he graduated (CVC) in 1911.

In the course of his talk, Mr. Guard enumerated the ways in which Dr. Stearns had used the bag and its contents through the intervening years. Quite naturally, it was easier to record the items which dealt with disease eradication and with preventive veterinary medicine than the cases in which individual ailing animals were treated. Conservative estimates indicate that the bag had carried the syringes and tuberculin used in applying the tuberculin test to some 200,000 head of cattle. Another set of syringes helped to vaccinate 480,000 head of cattle against blackleg. Still others were aids in the vaccination of 180,000 hogs against cholera. Some of the syringes helped in the testing of 6,000 mules and horses for glanders, and others assisted in vaccinating 60,000 sheep against sore mouth and other shipping ailments. An estimated 10,000 chickens were vaccinated against pox, laryngotracheitis, and other conditions, or blood samples were drawn from them for pullorum testing. Just how many dogs were vaccinated against distemper and rabies, or how many cats were injected to prevent feline enteritis and panleucopenia was not recorded. Neither were the individual treatments for indigestion, bruises, and injuries, and all the multitude of ailments and mishaps to which man's animals are heir.

Using only the animals listed above, and using moderate prices (cows and horses $100, hogs $25, and sheep $15, etc.), the value of the animals protected against disease reaches the staggering figure of $80 million. Mr. Guard emphasized that livestock editors and livestock owners have learned to appreciate this service rendered by practicing veterinarians, and are anxious to have the veterinarians themselves realize the important position they occupy in the successful management and healthy maintenance of farm animals.

Urging the establishment of animal agriculture to displace the soil-depleting agriculture of cropping and mechanical harvesting, he emphasized the desirability of enlarging and increasing the 2,000 soil conservation districts, and of building contiguous to each of these districts a livestock-improvement district. Such a livestock district should be in the charge of a trained animal husbandman—and he is neither fully trained nor completely informed unless he posseses an education in veterinary medicine.

For the future, the AVMA should look toward the establishment of an agricultural relations department, headed by an ambassador to the livestock farmers and particularly to the organizations of these animal owners. Such a man, and such a department, could do much to assist the several branches of the livestock industry. He could help to cull the sick and inefficient animals, he could outline the programs for disease eradication and disease prevention based upon the latest information released by research workers, and he could stress the importance of thinking of disease as a herd problem, and, therefore, frequently improve the national livestock economy, conserve the soil, and provide more human food which contains the health protecting animal proteins.

SUMMARY

In conclusion, Mr. Guard again mentioned the importance of veterinarians to economical livestock production, to a permanent livestock-improvement campaign, to the production of ample quantities of human foods of high quality, and to human health, both from the standpoint of providing a better diet and of protecting human beings from the diseases which may be transmitted to them from animals.

The Veterinarian on Television

Television may prove to be one of the best things that has ever happened to the veterinary medical profession—from a public relations standpoint. From the same standpoint, however, it also could become a baneful medium devoted to self-promotion of unethical practitioners and commercial expansion of home medication. On the basis of preliminary experiences and studies in this field, the AVMA believes the latter possibility is outweighed by the potential advantages and, with the right kind of leadership, veterinarians will utilize television to perform a valuable educational service for animal owners while, at the same time, augmenting the prestige and public recognition of the profession.

In fact, properly employed, visual radio offers an unprecedented opportunity for portraying the true story of veterinary medical accomplishment: the veterinarian's skilled diagnosis, his knowledge of animal physiology and reaction to drugs, his ability to apply modern techniques of pain relief and therapy, his professional bearing and Hippocratic ideals.

A cardinal objective of the profession should be the promotion of better public understanding of animal health and of the profession's work through news, radio, or television, and not the attainment of selfish personal advantages. For this reason, the AVMA advises every veterinarian invited to appear on radio and television to insist that he be represented on the program as a spokesman for his local or state (or territorial or provincial) veterinary medical association, rather than as an independent participant representing only himself. Under such an arrangement, approval of the local or state group is first obtained and policies of that group are adhered to in the development of the veterinarian's part in the program. In this connection, television producers and program directors are mindful of professional ethics and, with rare exceptions, they will abide by any reasonable request.

The second major consideration is the type of program to be presented. Although the range of topics is limited by audience sensitivity to certain aspects of body function and illness, the selection is wide enough to afford many inspirations for effective programming. Conferences with television officials and with veterinarians who have appeared on recent telecasts leave

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Prepared by the Public Relations Department, American Veterinary Medical Association.

Dr. C. D. Van Houweling (left), AVMA director of professional relations, as he appeared on a recent television program in Chicago with Gail Compton, NBC announcer.

no question that programs dealing with pet animals and public health will be the favorites of listeners in urban areas, but as television facilities are expanded to reach rural audiences, there also will be considerable demand for demonstrations of large animal care. The following are examples of program possibilities which may be helpful to veterinarians participating in urban telecasts.

1) *Dogs and Cats.*—Demonstrate care of minor wounds on dog or cat; show how to handle an injured pet; explain how a veterinarian conducts a routine physical examination (look at ears to see if dirty or sore, teeth broken or covered with tartar, condition of coat); show wrong and right way to give a tablet; discuss rabies with announcer and assume that canine subject has dumb rabies (give precautions on examining it and warn not to try to open its mouth to see if a bone is lodged in throat); use a healthy subject and show where visible physical changes would occur as the result of specific nutritional deficiencies; show a drawing of an ear mite and explain how it attacks.

2) *Pet Birds.*—A substantial number of people own canaries and other pet birds, and they welcome advice on the care of these animals. Suitable for discussion and demonstration are the need for variety in the diet, prevention of sore feet by providing good perches, avoidance of drafts and sharp changes in temperature to prevent respiratory troubles.

3) *Research.*—Show how eggs are injected to make chicken embryo vaccines; explain how microscopic examination is utilized to detect disease-causing factors.

4) *Public Health.*—Discuss brucellosis, using charts to show animal and human incidence, highly susceptible species, means of transmission, and prevention of human infection. Two bottles of milk, one marked "pasteurized" and the other "not pasteurized," can be used to depict the health threat from unpasteurized milk. Explain public health protection afforded by meat, dairy, and poultry inspection, pointing out the things a veterinarian looks for when inspecting a carcass (by use of diagrams or appetizing meat specimens); also give pointers on what the housewife should look for in the meat she buys.

5) *Farm Animals.*—Because it is inconvenient or unsatisfactory to stage certain types of programs for direct telecast, leaders in this field plan extensive use of short movies as "fillers" and supplements. When rural outlets are opened, there will be considerable demand for veterinarians to appear in movies depicting the health maintenance of livestock and poultry, especially for use on farm programs. However, even at present, there are certain farm animal subjects which have television appeal for metropolitan audiences. For example, a severe epizoötic that threatens meat supplies is always of interest to farm and city audiences alike, as is the birth of a famous Thoroughbred's foal. Such incidents, often requiring a veterinarian on the scene, can sometimes be televised directly, but usually it is more desirable to film them for reproduction on news programs presented at a later scheduled time. When a practicing veterinarian is shown in a situation of this type—on an actual call while caring for a patient—it may be judicious not to have the veterinarian mentioned by name, although it is always desirable that mention be made of the fact that a veterinarian is attending the case. The matter of name identification under such circumstances should be considered by the public relations committee of each constituent association and a definite decision made which will apply to all members within that association's jurisdiction.

The third major consideration involves appearances on commercially sponsored programs. Notwithstanding that noncommercial, public service programs are preferred by all professions, there is usually no reason for shunning a commercially supported program that will portray the veterinarian's work with no product-testimonial strings attached. Here again, the final decision rests with the local and state associations. Before consenting to take part in a commercial program, the veterinarian and his association should be confident of the integrity of the company and its products, the script and telecast setting should be studied critically, and definite provision made for an announcement that the coöperation of the veterinarian and his association does not imply endorsement or support of the advertiser's products.

A FEW DO'S AND DON'TS

Experiences in radio have shown that it is inadvisable to discuss certain types of body conditions and diseases. For example, detailed discussions of internal parasites are banned by some stations, especially when the program is presented near a meal hour, the view being that worms have an unpleasant connotation that will discourage sensitive diners from listening to the program. The same view is held by a lesser number of program directors regarding foot rot, abortion, diarrhea, and hemorhagic conditions. These prohibitions likewise apply to television—even more so.

Antivivisectionists are constantly looking for scientific loopholes that can be dev-

eloped for use in campaigns against medical men, and they do not pass up an opportunity to drag veterinarians into the picture. A dog with a minor wound being given first aid by a veterinarian on television is likely to arouse charges of "vivisecting" unless a witness can vouch for the natural history of the wound. Similarly, when the AVMA was planning its telecast on fracture fixation for the 1949 Detroit convention, precautions were taken to prevent false accusations as to the origin of the injuries. The moral is, if injuries or surgical techniques are to be portrayed with live subjects, select only those with a verified history.

If it is necessary to use patients on a program, be sure to get written permission from the owner beforehand. It is unwise to display patients suffering from infectious diseases or parasitic conditions, even though the owner may consent. When such cases are brought to public attention, neighbors of clients may launch complaints or take action that will make the owners regretful of having coöperated.

Where there are several veterinarians in an area, it is inadvisable for one practitioner to make repeated appearances on broadcasts or telecasts, even though the station may request it. Instead, turns should be taken by other local veterinarians who are willing and qualified to participate. If this policy is not followed, suspicions or charges of unethical conduct are likely to be leveled at the repeater.

Type O Foot-and-Mouth Disease Virus in Mexico

A confined but nevertheless alarming outbreak of type O foot-and-mouth disease in Mexico has been reported by the U. S. Department of Agriculture. Of all three types of foot-and-mouth disease virus (A, O, and C), type A was the only one known to be involved in the Mexican epizoötic prior to positive identification of the type O virus the latter part of October, 1949.

Occurrence of the new type is believed to have been limited to one ranch in Chicoloapan, State of Mexico, according to reports issued prior to Dec. 1, 1949, although eradication forces were alerted for action in the event of additional type O outbreaks. All stock on the ranch, which is 13 miles east of Mexico City and near the center of the quarantine zone, had been vaccinated twice against type A virus.

For the time being, slaughter, disinfection, and intensive inspection—with emergency revaccination of all susceptible stock in adjoining areas—is the plan for fighting type O infection. However, if there should be more type O outbreaks, a bivalent vaccine will be needed, as the vaccine now in use protects only against type A virus.

Official reports offered no theory as to how the new type virus may have been introduced. Types O and A are both common in Europe, type C is found frequently in Mediterranean areas, and all three types are present in South America, the U. S. Bureau of Animal Industry said.

Foot-and-Mouth Disease

The first part of Dr. Menges' paper entitled "Cyclic Variations in Prevalence of Foot-and-Mouth Disease" was published in the November, 1948, issue of the JOURNAL. The second and last part was to be published in the December, 1948, issue, but because conditions in Mexico at that time were changing so rapidly, it was not advisable to publish the second part. Now, to conclude the paper, the author asks that only the summary and references pertaining to the entire manuscript be published, which accordingly appear here.—ED.

SUMMARY

The general history of foot-and-mouth disease* and the occurrence of the disease in Germany, Great Britain, the Netherlands, and Mexico have been presented. From this limited study one might realize the following possibilities:

1) In countries where foot-and-mouth disease was enzoötic, there appeared to be definite evidence that cyclic variations in prevalence occurred.

2) No definite time interval between epizoötics was determined that could be set up as standard for all the countries studied.

3) In enzoötic countries, periodic epizoötics were probably not the result of newly introduced infection from another country. New outbreaks of the disease may be explained by movement of infected animals into areas of the country which have been free of the disease, or the movement of nonimmune animals into an infected area. The possibility of reservoir hosts should also be considered.

It should be pointed out that this study

*The following synonyms have been found for foot-and-mouth disease: aphthous fever; epizoötic aphtha; aphthae epizoöticae; infectious aphtha; eczema contagiosa; fievre aphtheuse (French); cocotte (French); maul- und klauenseuche (German); febre aftosa (Italian); fiebre aftosa (Spanish); ekzema epizoötica; vesicular murrain; aphthongular disease.

is far from being complete. There is need for a complete development of the history of foot-and-mouth disease. In addition, there is much to be gained by a complete analysis of the occurrence of the disease in all countries of the world. It must be understood that this is a world-wide disease, and its control is a world-wide project.

References

[1]Bulloch, W.: Foot-and-Mouth Diseases in the Sixteenth Century. J. Comp. Path. and Therap., *40*, (1927): 75.

[2]Great Britain. Ministry of Agriculture and Fisheries: Fifth Progress Report of Foot-and-Mouth Disease Research Committee. His Majesty's Stationery Office, London (1937).

[3]Great Britain, Board of Agriculture and Fisheries. Foot-and-Mouth Disease Committee: Report of the Departmental Committee Inquiry into Foot-and-Mouth Disease (1912, 1914). Minutes of Evidence, Appendices, and Index (1912). His Majesty's Stationery Office, London (1912, 1914).

[4]Greenwood, M.: Some Epidemiological Observations on Foot-and-Mouth Disease, with Special Reference to the Recent Experience of Holland. J. Hyg., *26*, (Oct., 1927): 465-489.

[5]Seiffert, Gustav: Virus Diseases in Man, Animal and Plant. Translation by Marion Lee Taylor. Philosophical Library, New York (1944): 123-128.

[6]Vallé, H., and Carré, H.: Sur la pluralité des virus aphteux. Compt. rend. Acad. Sci., *175*, (May, 1922): 1498-1500.

[7]Löeffler, and Frosch: Summarischer Bericht über die Ergebnisse der Untersuchungen der Kommission zur Erforschung der Maul- und Klauenseuche bei dem Institute für Infektionskrankheiten in Berlin. Zentralblatt für Bakt., Parasitenkunde u. Infektions-krankheiten. Originale, (Erste Abth.), *22*, (Sept., 1897): 257-259.

[8]Hecker: Summarischer Bericht über die Ergebnisse der Untersuchungen des seuchenpathologischen institutes des Landwirtschaftskammer für die Provinz Sachsen zur Erforschung der Maul- und Klauenseuche. Berl. tierärztl. Wschr., (1899): 131-132.

[9]Waldmann, O., and Pape, J.: Die Künstliche Übertragung der Maul- und Klauenseuche auf des Meerschweinchen. Berl. tierärztl. Wschr., *36*, (1920): 519-520. *Ibid.*, *37*, (1921): 349.

[10]Gins, H. A., and Krause, C.: Zur Pathologie der Maul- und Klauenseuche. Ergebnisse d. Allgemein. Path. u. Path. Anat. 20 ter. J. II Abt. II Teil, (1924): 805-912.

[11]Trautwein, K.: Maul- und Klauenseuche. Ergebnisse Der Hygiene Bakteriologie Immunitätsforschung und Experimentellen Therapie. Verlag von Julius Springer, Berlin, *10*, (1929): 561-696.

[12]Maitland, M. C.: Third Progress Report of the Foot-and-Mouth Disease Research Committee. H. M. Stationery Office, London (1928): 96.

[13]Gins, H. A.: Mikroskopische Befunde bei experimenteller Maul- und Klauenseuche. Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten. Originale. Verlag von Gustav Fischer, Jena. Erste Abteilung, 88 Band, (1922): 265-269.

[14]Waldmann, O., and Trautwein, K.: Experimentelle Untersuchungen über die Pluralität des Maul- und Klauenseuchevirus. Berlin tierärztl. Wschr., *42*, (1926): 569.

[15]Ciuca, A.: The Reaction of Complement Fixation in Foot-and-Mouth Disease as a Means of Identifying the Different Types of Virus. J. Hyg., *28*, (Feb., 1929): 325-339.

[16]Helm, R.: Die Differenzierung der Virustypen der Maul- und Klauenseuche durch die Komplementbinding. Zentralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten. Verlag von Gustav Fischer, Jena. Originale. Erste Abteilung, 130 Band, (1933): 305-312.

[17]Lavaditi, C., Nicolau, S., and Galloway, I. A.: Passage du virus de la fièvre aphteuse á travers les membranes en collodion. C. r. Acad. Sci., Paris, *182*, (1926): 247.

[18]Olitsky, P. K., and Boez, L.: Studies on Physical and Chemical Properties of Virus of Foot-and-Mouth Disease: Cataphoresis and Filtration. J. Exp. Med., *45*, (April, 1927): 685-699.

[19]Modrow, L.: Filtration and Ultrafiltration des Maul- und Klauenseuchevirus. Zeitschrift für Hygiene und Infektionskrankheiten. Verlag von Julius Springer, Berlin, 110, (1929): 618-643.

[20]Galloway, I. A., and Elford, W. J.: Filtration of the Virus of Foot-and-Mouth Disease Through a New Series of Graded Collodion Membranes. Brit. J. of Expti. Path., *13*, (1931): 407.

[21]Barnard, J. E.: Foot-and-Mouth Disease and Vesicular Stomatitis, A Comparative Microscopical Study. Proceedings of the Royal Society of London, Series B, *124*, (1937-38): 107-113.

[22]Hecke, F.: Züchtungsversuche des Maul- und Klauenseuchevirus in Gewebskulturen. Zentralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten. Verlag von Gustav Fischer, Jena. Originale. Erste Abteilung, *116*, (1930): 356-414.

[23]Striegler, E.: Die Vermehrung des Maul- und Klauenseuchevirus in flüssigen Kulturen in Gegenwart lebender Zellen. Zentralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten. Verlag von Gustav Fischer, Jena. Originale. Erste Abteilung. 128 Band, (1933): 332-336.

[24]Maitland, M. C., and Maitland, H. B.: Cultivation of Foot-and-Mouth Disease Virus. J. Comp. Path. and Therap., *44*, (1931): 106-113.

[25]Pyl, G., and Klenk, L.: Haltbarkeitsversuche mit dem Virus der Maul- und Klauenseuche. Zentralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten. Verlag von Gustav Fischer, Jena. Originale. Erste Abteilung. 128 Band, (1933): 161-171.

[26]Stockman, S., and Minett, F. C.: Researches on the Virus of Foot-and-Mouth Disease. J. Comp. Path. and Therap., *39*, (1926): 1-30.

[27]Vallée, H., Carré, H., and Rinjard, P.: Sur l'immunisation anti-aphteuse par le virus formolé. Rev. gén. Méd. Vét., *35*, (1926): 129.

[28]Krag, P., and Schmidt, S.: Komplementbindung bei Maul- und Klauenseucheinfektionen. Zeitschrift für Immunitätsforschung und experimentelle Therapie. Verlag von Gustav Fischer, Jena, *91*, (Aug., 1937): 409-412.

[29]Waldmann, O.: Riemser Maul- und Klauenseuche (M.K.S.) Vakzine. Deutsche tierärztl. Wchnschr., *46*, (1938): 569.

[30]Rosenbusch, C. T., Decamps, A., and Gelormini, N.: Intradermal Foot-and-Mouth Disease Vaccine. J.A.V.M.A., *112*, (Jan., 1948): 45-47.

[31]Gillie, G. W.: Report on Foot-and-Mouth Disease. J.A.V.M.A., *113*, (March, 1948): 196-197.

[32]Cabot, Daniel: Foot-and-Mouth Disease: Its Epizoötiological Aspects. Vet. Rec., *57*, (Aug., 1945): 375-379.

[33]Ernst, W.: Klinischer Ablauf und Epidemiologie der Maul- und Klauenseuche. Münch. tierärztl. Wschr., 77, (Nov., 1926): 667-671.

[34]Smith, Theobald: Parasitism and Disease. Princeton University Press, Princeton (1934): 118-119.

[35]Abstract, The Veterinary Record: Foot-and-Mouth Disease. J.A.V.M.A., *111*, (1947): 326.

Reproduction and milk production are so closely linked in many dairy cows that emphasizing one depletes the other. This is more noticeable in herds where raising calves is a major problem.—*W. J. Gibbons, D.V.M., Alabama.*

Twelve Years of Horse Breeding in the Army

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THOROUGH and complete veterinary medical records, comprising large numbers and kept over a decade, are usually not available on horse breeding. The veterinary service in the Army Horse Breeding Plan has, however, maintained such records. These contain information of great value to the veterinary profession.

THE ARMY HORSE BREEDING PLAN

The Veterinary Division, Office of The Surgeon General, prepared in 1936 a well-integrated plan to assist in the collection, submission, and tabulation, annually, of all significant veterinary data on horse breeding activities. These data, collected by veterinary officers at each remount depot, were submitted once yearly to the Veterinary Division, Office of The Surgeon General. Here such data were analyzed carefully and then disseminated to the veterinarians at each of the remount depots.

From time to time, the original plan has been improved by insuring the collection and submission of data which had not been included originally. Records on weight and retention of placentas, foals not normal at birth, and other pertinent information are valuable to the veterinarian who furnishes professional advice, care, and treatment in connection with breeding and foaling.

The plan adopted in 1936 was formulated for the additional purpose of insuring uniform veterinary care and treatment at all remount depots. Veterinary officers were kept informed of new developments in the field of horse breeding. As a result of the adoption of this plan, the veterinary service has made some noteworthy contributions to veterinary science. In addition, it has rendered an outstanding service to the Army Horse Breeding Plan.

Each depot veterinarian has maintained an accurate record on every animal. This has enabled him to assemble authentic information for the preparation of his yearly report on breeding activities. Annual reports have been submitted for the past twelve years. This paper represents a careful study and evaluation of the reports submitted during that period. Since these reports are based on authentic records, the deductions made therefrom are of vital importance to the veterinary profession. To simplify presentation, the material has been grouped into the following closely related subjects: breeding and conception; examination of mares; abortions; deaths of pregnant mares; normal and diseased foals; births of foals by months; weight and retention of placentas; breeding and testing stallions.

The eight accompanying tables represent a summary of the records for the 1936 to 1947 breeding seasons, inclusive, and the 1937 to 1948 foaling seasons, inclusive. These tables will be discussed and pertinent information, which it has not been possible to include in them, will be presented. Some of the facts shown therein are at variance with commonly accepted theories and beliefs.

To assist in the interpretation of certain data in the tables, a few facts relative to the remount service must be mentioned. That service maintained 600 stallions, the majority of which were Thoroughbreds. Four remount depots were located at Fort Reno, Okla.; Fort Robinson, Neb.; Front Royal, Va.; and Pomona, Calif. Each of these had a brood mare band of approximately 50 mares. The brood mare band at each of the first three named depots consisted of Thoroughbreds or grade Thoroughbreds. The band at Pomona was Arabian or grade Arabian mares. This depot was acquired in October, 1943.

Table 1 gives a complete summary of breeding and conception and the methods employed. The results of breeding of the three classes of mares, e.g. maiden, barren, and foaling, are shown only for the 1943 to 1947 breeding seasons, inclusive. Provisions had not been made prior to 1943 for reporting results of breeding of mares by the three classes. Prior to 1943, a large percentage of foaling mares were bred during the "foal heat period"—ninth-day breeding. Consequently, during the twelve-year period only 43.8 per cent of the foaling mares bred on the ninth day conceived to that breeding. However, in the period 1943 to 1947, inclusive, approximately 85 per cent of all foaling mares that were bred, conceived. This fact, coupled with the possibilities of irreparable damage to the genital tract of the mare, a decrease in her future breeding

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efficiency, abortion, production of dead, diseased, or otherwise abnormal foal at birth, should be given careful consideration in the selection of mares to be bred on the ninth day.

The following statement was included in the yearly breeding and foaling report (1946 breeding—1947 foaling) submitted from one of the remount depots by a veterinary officer. This officer has had considerable experience in rendering veterinary service to brood mare bands and is recognized as one of the outstanding veterinarians in this specialized field.

Results of pregnancies resulting from breeding on the ninth day after parturition:

9 mares conceived.

Results:

3 mares—produced normal foals.
1 mare—died from verminous aneurism.
1 mare—aborted in pasture.
1 mare—destroyed (hopeless dystocia, ankylosed joints, and closed urachus).
1 mare—dystocia, mare saved by embryotomy but unable to breed back this season.
1 mare—foal very crooked at birth but has straightened enough to be serviceable.
1 mare—foal crooked at birth and developed abscesses internally and died at 65 days.

Ninth-day breeding should be practiced as infrequently as possible. No mares should be bred on the ninth day if any of the following conditions occur:

1) Placenta weighs over 14 lb.
2) Placenta is retained for more than three hours.
3) Foal is weak, crooked, or dead at birth or dies shortly thereafter.
4) Mare needs assistance to foal.
5) Mare discharges abnormally either in color, quantity, or consistency during the first nine days after foaling.
6) Genital tract is not clean and free from every sign of infection and inflammation when examined on the seventh or eighth day after foaling.

The conception rate for all classes of mares was 83.6 per cent. An analysis of the results of the breeding of the three classes of mares, e.g., maiden, barren, and foaling, during the 1943 to 1947 breeding seasons, inclusive, shows the rate of conception to be highest in the foaling mares and lowest in the barren. It is rather generally accepted that the rate of conception is highest in maiden mares and lowest in foaling. During these five breeding seasons, the average number of services per foaling mare bred was lowest in the group of foaling mares except in the 1944 and 1945 breeding season. Likewise, the number of services per foaling mare bred was lower than the average number of services per conception for all mares.

The methods of breeding are shown also in table 1. Natural cover only was employed in the breeding of approximately 63 per cent of all mares, the remaining 37 per cent were bred by natural cover plus artificial insem-

TABLE 1—Breeding and Conception of Mares Maintained at Remount Depots, 1936 to 1947 Breeding Seasons Inclusive

	1947	1946	1945	1944	1943	1942	1941
No. mares bred and (conceived)	182 (151)	156 (128)	103 (91)	113 (83)	168 (132)	194 (168)	162 (133)
Maiden	27 (24)	43 (38)	9 (9)	17 (8)	44 (33)	.....	.....
Barren	61 (46)	41 (35)	31 (24)	32 (21)	26 (18)	.....	.....
Foaling	94 (81)	68 (55)	63 (58)	64 (54)	98 (81)	.....	.....
No. mares bred in 9th day heat and (conceived) from that breeding	12 (4)	4 (0)	15 (6)	18 (5)	19 (12)	60 (16)	53 (19)
Average No. services per mare bred	2.34	2.25	2.92	3.03	2.05	2.19	2.22
Maiden	2.11	2.51	3.31	5.68	2.65	.....	.....
Barren	2.54	2.52	3.74	2.99	2.31	.....	.....
Foaling	2.13	2.11	2.57	2.36	1.58	.....	.....
Average No. services per conception	2.17	2.28	2.76	4.06	1.98	2.17	2.33
No. mares bred artificially only	0	0	2	0	0	1	1
No. mares bred by natural cover only	134	122	66	88	74	104	80
No. mares bred by natural cover plus artificial insemination	48	34	55	25	94	89	81

Prior to 1943, provisions had not been made for reporting results of breeding of mares by the three classes, e.g., maiden, barren, and foaling.

ination. Pasture breeding was not practiced during this twelve-year period at any of the four remount depots.

EXAMINATION OF MARES

Data on the pre- and postbreeding examination of mares is shown in table 2. Prebreeding bacteriologic examination of the genital organs were conducted on one-fourth of all mares bred. An average per mare of one and one-half prebreeding physical examinations of the genital organs was accomplished. It has long been the accepted practice at each of the remount depots to examine mares physically for pregnancy at approximately the fiftieth day subsequent to the last breeding and again in the fourth month of pregnancy. At the latter time, the first series of vaccinations against equine contagious abortion are administered. This accounts for the number of physical examinations which average approximately two per pregnant mare. Biologic tests to diagnose pregnancy were employed at one depot during the entire period. These tests have been conducted during only part of the twelve-year period at each of the other three remount depots.

ABORTION STATISTICS

Table 3 gives statistical information on abortion among mares. It is interesting to note that the abortion rate for all depots for the twelve-year period was 9.75 per cent. Approximately 23 per cent of all abortions (161) resulted from an outbreak of virus abortion which occurred subsequent to the 1937 breeding season at one remount depot and subsequent to the 1942 breeding season at another depot.

The outbreak at the Fort Reno remount depot in 1942 was unusually severe. Twenty-three of the 49 pregnant mares aborted. Nine of the 23 mares which aborted were affected with paralysis. Two of the 9 cases aborted and lived, 1 was aborted manually and survived, and 1 mare recovered from the paralysis and produced a normal foal at 330 days. The symptoms observed in each of these 9 cases were weakness in posterior limbs which appeared suddenly; complete sensory and motor paralysis of both hind legs extending to the fore limbs within twenty-four hours; complete paralysis of the entire body, except the head and neck, developing in a few hours; temperature subnormal to normal; pulse full and strong with the rate slightly lower than normal; respirations slow and deep; superficial circulation normal except over posterior limbs; normal deglutition and swallowing; finally, increased pulse and heart rate with death occurring in thirty-six to ninety-six hours.

The insignificant autopsy findings were increased amount of cerebral fluid; ecchymotic hemorrhages of mucous membrane of bladder; spleen twice its normal size; splenic lymph gland hyperemic; slight hy-

TABLE 1 (Continued)—Breeding and Conception of Mares Maintained at Remount Depots, 1936 to 1947 Breeding Seasons Inclusive

	1940	1939	1938	1937	1936	Total	Conception rate (%)
No. mares bred and (conceived)	161 (139)	167 (143)	192 (157)	201 (175)	177 (152)	1976 (1652)	83.6
Maiden	.....	.....	.....	.....	.....	140 (112)	80.0
Barren	.....	.....	.....	.....	.....	191 (144)	75.4
Foaling	.....	.....	.....	.....	.....	387 (329)	85.0
No. mares bred in 9th day heat and (conceived) from that breeding	56 (24)	68 (32)	144 (49)	112 (66)	85 (50)	646 (283)	43.8
Average No. services per mare bred	2.85	2.57	2.31	2.14	2.45	.....	.....
Maiden	.....	.....	.....	.....	.....	.....	.....
Barren	.....	.....	.....	.....	.....	.....	.....
Foaling	.....	.....	.....	.....	.....	.....	.....
Average No. services per conception	2.54	2.44	2.34	2.15	2.43	.....	.....
No. mares bred artificially only	0	0	2	1	0	7	.....
No. mares bred by natural cover only	98	101	130	129	129	1225	.....
No. mares bred by natural cover plus artificial insemination	63	66	60	71	48	734	.....

Prior to 1943, provisions had not been made for reporting results of breeding of mares by the three classes, e.g., maiden, barren, and foaling.

peremia of hepatic lymph gland; intestinal lymph glands hyperemic; catarrhal to hemorrhagic infiltration of intestinal mucosa. Internal organs of fetuses were normal. All cultures of fetal organs were negative on bacteriologic examination.

fourth month of pregnancy when the first series of vaccinations using *Salmonella abortivo-equinas* vaccine is administered. This streptococcic infection often disappears soon after aborting. Twins were responsible for 9 per cent of the abortions.

TABLE 2—Examination of Mares at Remount Depots, 1936 to 1946 Breeding Seasons Inclusive

	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	Total
No. mares bred	182	156	103	113	168	194	162	161	167	192	201	177	1,976
No. prebreeding physical examinations of genital organs conducted	251	197	152	86	202	328	319	393	266	223	264	175	2,856
No. prebreeding bacteriologic examinations of genital organs conducted	92	72	33	...	24	5	43	131	25	65	28	31	549
No. mares conceived	151	128	91	83	132	168	133	139	143	157	175	152	1,652
No. physical examinations conducted to diagnose pregnancy	236	309	153	158	220	319	241	254	302	292	355	250	3,089
No. biologic tests conducted to diagnose pregnancy	52	98	39	28	72	13	3	111	60	112	93	140	821

During 1943 to 1947, inclusive, the abortion rate among the three classes of mares, e.g., maiden, barren, and foaling, was essentially the same. It is generally accepted that the abortion rate is higher in foaling mares than in the other two classes. The low abortion rate in the foaling mares may be explained by the fact that only 17 per cent of foaling mares were bred on the ninth day.

"Undetermined" was listed as the cause in 56 per cent of the abortions. It is believed that some of these were due to *Streptococcus genitalium*, since this infection was diagnosed on bacteriologic examination of only 10.5 per cent of the total number of abortions. Abortions resulting from infection with *Str. genitalium* occur very early in pregnancy—usually prior to the fourth month. Such abortions are usually not observed until the mare is reëxamined at the

Deaths of Pregnant Mares

Table 4 gives the incidence and causes of deaths of pregnant mares. Only 31 (2%) of the 1,652 mares conceiving, died prior to foaling. This death rate is considerably lower than is anticipated and experienced in groups of horses used for purposes other than breeding. As a direct or indirect result of foaling, only 10 (0.7%) of the 1,446 mares foaling died. Dystocia caused the death of only 2 mares during the twelve-year period. This is an enviable record which proves conclusively that difficult deliveries can usually be averted by good veterinary professional care at foaling. The importance of furnishing prompt and efficient service in handling potential dystocias cannot be overemphasized.

Normal and Diseased Foals

Table 5 shows all data pertaining to both

TABLE 3—Abortions Among Mares Maintained at Remount Depots, 1936 to 1947 Breeding Seasons Inclusive

	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	Total
No. mares conceived	151	128	91	83	132	168	133	139	143	157	175	152	1,652
No. mares aborting	6	7	11	8	9	36	6	13	14	17	21	13	161
Maiden	0	2	0	2	3	...	...	...	...	...	...	...	7
Barren	1	2	2	3	1	...	...	...	...	...	...	...	9
Foaling	5	3	9	3	5	...	...	...	...	...	...	...	25
Causes of abortion													
Induced	...	1	...	...	...	...	...	...	...	...	...	...	1
Salmonella abortivo equinas	...	...	...	1	...	...	...	...	...	...	...	...	1
Streptococcus genitalium	3	3	...	...	...	...	...	1	7	3	...	...	17
Equine virus abortion	...	...	...	...	...	23	...	...	4	...	...	...	27
Twins	1	...	...	2	...	2	1	3	1	1	3	1	15
Staphylococcus	...	...	...	...	...	...	...	...	...	...	...	1	1
Bipolar organism	...	...	...	...	...	...	...	2	...	...	...	...	2
Metritis	...	...	...	...	...	...	1	...	...	...	...	...	1
Strangulated umbilical cord	...	...	...	...	...	1	...	...	...	...	1	...	2
Severe systemic reaction incident to shipment	...	1	...	...	...	...	...	...	...	...	...	...	1
Injury	...	...	...	...	...	1	...	...	...	...	...	...	1
Toxemia	...	...	...	...	...	1	...	...	...	...	...	...	1
Abnormal development of fetus	...	...	...	...	...	...	...	...	...	1	...	...	1
Undetermined	2	2	11	5	9	8	4	7	2	12	17	11	90

Abortion rate at all depots for the period 1936 to 1947 inclusive was 9.75 per cent. Prior to 1943, provisions had not been made for reporting abortions among mares by the three classes, e.g., maiden, barren, and foaling.

normal and diseased foals. The living foal percentage, which is determined by dividing the number of living foals at birth by the number of mares bred, was lowest in 1945

TABLE 4—Deaths of Pregnant Mares at Remount Depots, 1936 to 1947 Breeding Seasons Inclusive

	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	Total
No. pregnant mares dying prior to foaling	1	2	2	2	4	12	2	0	2	1	1	2	31
No. mares dying as direct or indirect result of foaling	1	1	1	1	0	0	2	0	1	1	1	1	10
Cardiac arrhythmia	0	1	0	0	0	0	0	0	0	0	0	0	1
Volvulus	0	0	0	0	0	0	0	0	0	0	1	0	1
Prolapse of uterus	0	0	1	0	0	0	0	0	0	0	0	0	1
Dystocia	1	0	0	0	0	0	0	0	0	0	0	1	2
Metritis	0	0	0	1	0	0	0	0	0	0	0	0	1
Rupture of colon	0	0	0	0	0	0	0	1	0	0	0	0	1
Rupture of cecum	0	0	0	0	0	0	1	0	0	0	0	0	1
Internal hemorrhage	0	0	0	0	0	0	1	0	0	1	0	0	2

and 1943. This resulted mainly from a relatively low conception rate (73%) from the 1944 breeding and from a large number of abortions subsequent to the 1942 breeding season. The living foal percentage, except for these two years, has remained rather constant (72.5 to 79.1%). Prior to 1944, provisions had not been made for reporting foals dead or otherwise not normal at birth. Pyosepticemia neonatorum and goiter were the causes given for 43 per cent of the foals not normal at birth, which were born during the 1944 to 1948 foaling seasons, inclusive. All cases of goiter were reported in foals born at the Fort Robinson remount depot.

In table 5, are shown the foal deaths occurring within thirty days after birth, and the causes therefore. One-third of all deaths resulted from pyosepticemia neonatorum which was the leading cause of foal deaths.

BIRTHS OF FOALS BY MONTHS

The births of foals by months are summarized in table 6. It will be noted that approximately two-thirds of all births occurred during March and April. Only a small percentage was born during January and February. Facilities were not available at the remount depots for the care of large numbers of early foals. The breeding season at the depots was of three months' duration beginning on or about March 15 and closing on or about June 15. The breeding season opens on or about February 15 at the majority of Thoroughbred studs and closes early in June. The short breeding

TABLE 5—Normal and Diseased Foals at Remount Depots, 1937 to 1948 Foaling Seasons Inclusive

	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	Total[1]
No. living foals at birth	144	118	78	65	119	121	126	126	125	140	155	131	1,446
Living foal percentage	79.1	75.7	72.4	57.5	70.8	62.4	77.8	78.3	74.9	72.9	77.1	74.0	73.2
No. foals not normal at birth	7	5	10	7	8	....	....	....	....	....	....	....	35
Pyosepticemia neonatorum	1	1	1	5	2	....	....	....	....	....	....	....	8
Goiter	....	....	5	2	2	....	....	....	....	....	....	....	7
Contracted tendons	....	....	3	....	1	....	....	....	....	....	....	....	4
Deformity of Legs	....	....	....	2	1	....	....	....	....	....	....	....	3
Twins (dead at birth)	1	....	2	....	....	....	....	....	....	....	....	....	3
Stillborn	5	1	....	....	1	....	....	....	....	....	....	....	5
Ankylosis of atlas and occipital bone	....	....	1	....	....	....	....	....	....	....	....	....	1
Pulmonary edema	....	....	....	....	1	....	....	....	....	....	....	....	1
Congenital malformation	2	....	....	....	....	....	....	....	....	....	....	....	2
No. foal deaths within 30 days after birth	7	5	1	3	6	8	5	4	4	4	9	2	58
Pyosepticemia neonatorum	2	1	1	2	5	1	2	....	1	2	4	....	19
Premature	2	1	....	....	....	3	....	....	....	....	....	....	6
Destroyed—deformity of legs or joints	2	....	....	1	2	1	....	....	....	....	....	....	6
Undetermined	....	....	....	....	....	....	....	1	2	1	....	1	5
Twins	....	....	....	....	....	....	1	1	1	....	....	....	3
Icterus	1	1	....	....	....	....	....	....	....	....	1	....	3
Rupture vena cava	....	1	....	....	....	....	....	....	....	....	....	....	1
Rupture liver	....	....	....	....	....	....	....	....	....	....	1	....	1
Destroyed—fracture femur	....	1	....	....	....	....	....	....	....	....	....	....	1
Deformity alimentary tract	....	....	....	....	....	....	....	....	....	1	....	....	1
Gastritis	....	....	....	....	....	....	....	....	....	....	1	....	1
Rupture stomach	....	....	....	....	....	....	....	....	....	....	....	1	1
Rupture bladder	....	....	....	....	....	....	....	....	....	....	1	....	1
Pulmonary edema	....	....	....	....	1	....	....	....	....	....	....	....	1
Toxemia	....	....	....	....	....	....	....	....	....	....	1	....	1
Encephalitis	....	....	....	....	....	1	....	....	....	....	....	....	1
Failure of foramen ovale to close	....	....	....	....	....	1	....	....	....	....	....	....	1
Uremia due to congenital occlusion of ureters	....	....	....	....	....	1	....	....	....	....	....	....	1
Deformed pulmonary artery and aorta	....	....	....	....	....	....	....	1	....	....	....	....	1
Cerebral concussion	....	....	....	....	....	....	1	....	....	....	....	....	1
Destroyed—amaurosis	....	....	....	....	....	....	....	1	....	....	....	....	1
Peritonitis	....	....	....	....	....	1	....	....	....	....	....	....	1

Living foal percentage is determined by dividing the number of living foals at birth by the number of mares bred. Prior to 1944, provisions had not been made for reporting foals not normal at birth.

season at the remount depots, and the comparatively late foaling of the mares, impose a severe handicap on the breeding, particularly of foaling mares.

It is regrettable that the original plan for recording and reporting the results of breeding and foaling did not include provisions for submission of data on the weight, retention, and manual removal of placentas, which are included in table 7, for the 1944 to 1948 foaling seasons, inclusive. Approximately one-third of all placentas weighed over 14 lb. Ten per cent were retained for a time believed to be longer than normal. It was necessary during these four foaling seasons to remove manually 2.9 per cent of all placentas—all or in part.

TABLE 6—Birth of Foals by Months at Remount Depots, 1937 to 1948 Foaling Seasons Inclusive

	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	Total	Percentage
No. living foals at birth...	144	118	78	65	119	121	126	126	125	140	155	131	1,446	
January	6	6	4	1	0	1	1	2	3	3	0	0	27	1.8
February	4	9	5	5	2	8	14	6	13	17	17	14	114	7.8
March	47	24	23	14	24	29	44	41	44	48	53	56	427	29.5
April	49	47	21	16	54	46	39	53	51	44	60	57	537	37.1
May	27	22	16	13	36	30	26	21	14	27	24	20	276	19.1
June	11	7	4	3	3	7	2	3	0	1	1	4	46	3.2
July to December incl..	0	3	5	13	0	0	0	0	0	0	0	0	21	1.5

TABLE 7—Weight and Retention of Placentas at Remount Depots, 1943 to 1948 Foaling Seasons Inclusive

Number of	1948	1947	1946	1945	1944	Total	Percentage
Mares foaling	144	118	78	65	119	524	
Placentas weighing over 14 lb.	52	38	20	15	47	172	32.8
Placentas, all or part of which, were retained over 3 hours	7	6	5	3	11	32	6.1
Placentas, all or part of which, were retained over 8 hours	6	4	3	2	2	17	3.2
Placentas, all or part of which, were removed manually	2	2	3	3	5	15	2.9

BREEDING AND TESTING STALLIONS

Table 8 shows the breeding and testing of stallions and the microscopic and bacteriologic examination of semen. This testing and these examinations were conducted on both the agent and the depot stallions. When a stallion, which has been on loan to an agent, is returned to a depot, he is tested and examined thoroughly to insure that he is free from communicable disease and is in good breeding health.

CONCLUSIONS

Ninth-day breeding should be practiced as infrequently as possible.

Mares and stallions should be kept in good physical condition and excellent breeding health at all times.

The importance of the maintenance of accurate records on all matters incident to breeding, foaling, abortions, examinations of mares and stallions, deaths of pregnant mares, foals not normal at birth, foal deaths, and weight and retention of placentas, cannot be overemphasized.

To maintain high standards of efficiency of the veterinary service in the care and treatment of breeding animals, it is imperative that the veterinarian have access to this essential data at all times.

TABLE 8—Breeding and Testing Stallions at Remount Depots, 1936 to 1947 Inclusive

	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	Total
Stallions bred to depot mares	34	40	16	15	12	16	11	10	15	19	19	20	227
Agent and depot stallions tested	135	126	129	93	120	212	108	134	115	75	106	117	1,470
Microscopic examinations of semen conducted	544	501	387	300	250	575	622	573	580	564	570	396	5,842
Bacteriologic examinations of semen conducted	19	13	38	unk.	5	82	26	129	12	41	87	65	517

Agent stallions are those loaned by the army to individuals and maintained by them for breeding purposes.

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A Survey of Salmonella Organisms in Market Meat, Eggs, and Milk

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INFECTIONS with bacteria belonging to the genus Salmonella constitute a major problem in veterinary medicine, not only for the ability of such microörganisms to cause disease in animals and birds but also for the role which food infected with Salmonella organisms plays in human pathology. Modern requirements for sanitation burden the veterinary medical profession with the responsibility of food inspection. In addition to the necessity of selecting animals and birds for food by clinical examination before slaughter, there is also a need for a postmortem study of each carcass before it reaches the consumer's table. Inspection and veterinary supervision during the evisceration of the slaughtered animal and bird are of paramount importance. They prevent diseased parts from reaching the consumer's table and protect against the contamination of edible parts with material which usually contains many pathogenic microorganisms, e.g., intestinal contents.

Food inspection carried out by the U.S. Department of Agriculture is under a set of rules which aims to fulfill both purposes: condemnation of diseased carcasses or their parts, and prevention of gross contamination of edible parts by setting up certain rules for inspection and the handling of meat and meat products. While the inspection of meat from animals is well established by federal laws and rulings, the supervision of fowl is still elementary. The entire program of poultry inspection is on a voluntary basis.

Two means of poultry supervision were set up, grading and inspection. Grading consists only of external inspection before slaughter, while inspection includes postmortem examination of the carcasses. Infections of birds, however, cannot always be detected by mere antemortem grading which is designed solely for the estimation of the value of the meat according to external signs. Salmonellosis is one of the diseases of fowl which easily escapes attention, because adult birds do not necessarily show external signs or symptoms if infected with such organisms. Many workers[1-19] have collected data and references on the relationship of avian and human salmonellosis. Thus, the question arose: Does federal postmortem inspection reduce the danger of human Salmonella infection by market fowl and poultry products?

Some writers,[1, 2, 4, 12, 18-20] and others, proved that normal hogs, their meat, and intestinal contents, harbor Salmonella. Surveys of market meat, however, were carried out on a small scale. In the United States and its dependencies, only Cherry *et al.*,[20] in Kentucky, and Felsenfeld *et al.*,[18] in Puerto Rico, reported the results of the examination of a limited number of meat samples for Salmonella.

In view of the rapid increase in consumption of fowl in the United States, and the growing interest in federal food supervision, it seemed advisable to carry out such surveys also in Illinois. Due to the use of improved laboratory methods, the diagnosis of human outbreaks caused by Salmonella organisms, which were formerly considered as purely animal-adapted, has constantly increased during the last years. A preliminary report, comparing parts of this study with a similar survey in South America, is being published.[18] Here, we wish to relate the final statistics of these studies, with special regard to the distribution of the Salmonella strains in food and man.

MATERIALS AND MEDIUMS

Between January, 1943, and April, 1949, samples of meat were bought in clean stores which conduct their business according to local rules of hygiene. As soon as possible (usually within 10 minutes), the samples were put into sterile buffered glycerol-saline, delivered to the laboratory, triturated, and streaked to Levine's eosin-methylene blue agar and SS plates (Difco). Some of the material was inoculated into tetrathionate broth and, after twenty-four hours of incubation, streaked to Levine's and to SS plates. Suspicious colonies were picked to Hajna's triple sugar iron agar and then studied, using established bacteriologic procedures.* The

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*Reasons for selecting these mediums, and detailed information regarding the procedure, were described in the J. Bact., 53, (1947): 73; Am. J. Clin. Path.,

typing of each culture of Salmonella was carried out by us. Strains with unusual behavior and uncommon types were, however, mailed to one of the other Salmonella-typing centers for study.

TABLE 1—Examination of Poultry for Salmonella Strains

Specification	Examined (No.)	Salmonella cultured from (No.)	(%)
U.S. inspected birds	327	3	0.9
Uninspected birds — samples collected in shops	316	29	9.2
Uninspected birds — samples collected in homes	432	52	12.1
Total uninspected birds	748	81	10.8
Meat samples—			
i.b.*	603	7	1.2
u.b.s.**	80	7	8.8
u.b.h.†	220	20	9.9
Liver samples—			
u.b.s.	91	8	8.7
u.b.h.	107	16	14.9
Liver and meat samples—			
u.b.s.	120	12	10.0
u.b.h.	210	31	14.7
Liver, meat and spleen samples—			
u.b.s.	255	18	7.1

*i.b. = U.S. inspected and passed birds.
**u.b.s. = uninspected birds, samples collected in shops.
†u.b.h. = uninspected birds, samples collected in homes.

Samples from various households were collected in 1-oz., wide-mouth bottles with sterile buffered glycerol-saline and brought to the laboratory within forty-eight hours.

The contents of eggs and milk samples were introduced directly into tetrathionate broth tubes, using 3-ml. inoculums for each 10 ml. of broth, and plated after twenty-four hours' incubation to Levine's and SS mediums.

Careful discrimination was made between U.S. inspected and uninspected products. Due to the fact that U.S. graded poultry is not being subjected to postmortem examination by a competent veterinarian or other qualified food inspector, such poultry was considered as not inspected. Uninspected pork samples were available from home slaughtering only during the war. All samples of hamburger hash** were purchased in stores without deep freeze. None of it was sold in a sealed container carrying the label of the producer or of inspection. There was no reason to consider graded eggs as "inspected" from the point of view of bacteriologic sterility; thus, the results of egg examinations are reported under a single heading. Only samples of grade A pasteurized milk were examined, because county ordinances forbid the sale of raw milk.

RESULTS

Tables 1 and 2 show the number of Salmonella strains isolated from poultry and pork. Data on other foods not listed in these tables are:

1) None of the 1,000 milk samples yielded Salmonella.
2) Of the 500 eggs examined, only 3 (0.6%) harbored Salmonella.
3) Salmonella strains were also isolated in 3 of 100 samples (3.0%) of dried egg powder.
4) Only 1 of the 512 beef samples (0.2%) yielded Salmonella.
5) Of the 102 samples of hamburger hash, 18 (17.6%) were infected with Salmonella.

Distribution of Salmonella in Samples.—The organisms isolated from U.S. inspected fowl were *Salmonella typhimurium* 1 and *Salmonella pullorum* 2. The samples of uninspected poultry collected in shops showed the following distribution of Salmonella: liver—*S. typhimurium* 2, *oranienburg* 1, *pullorum* 3, *meleagridis* 1, *worthington* 1; meat—*typhimurium* 1, *montevideo* 1, *pullorum* 2, *anatum* 1, *illinois* 1, *senftenberg* 1; liver and meat—*typhimurium* and *pullorum* 1, *oranienburg* 1, *newport* 1, *pullorum* alone 2, *panama* 1, *meleagridis* 1; liver, meat, and spleen—*typhimurium* 1, *bredeney* 1, *oranienburg* 1, *bareilly* 1, *pullorum* 1, *senftenberg* 1, and *poona* 1.

The samples of uninspected fowl collected from

15, (1945): 584, and 19, (1949): 106; Am. J. Digest. Dis., 14, (1947): 392; and Puerto Rico J. Pub. Health and Trop. Med., 24, (1948): 9.

**These samples, thus, should be designated as "chopped meat" or "meat hash."

TABLE 2—Examination of Pork for Salmonella Strains

Specification	U.S. inspected and passed							Uninspected	
	Collected in shops		Collected in homes		Together			Collected in homes	
	Samples (No.)	Positive (No.)	Samples (No.)	Positive (No.)	Samples (No.)	Positive (No.)	Positive (%)	Samples (No.)	Positive (No.)
Brains	28	7	7	3	35	10	28.5	0	.....
Chops	30	3	41	4	71	8	17.9	19	7
Kidneys	32	0	18	1	50	1	2.0	0	.....
Liver	31	13	46	19	77	32	41.6	11	9
Loin	30	3	41	2	71	5	7.1	21	2
Ribs	32	2	40	3	72	5	7.0	13	2
Sausage, fresh	31	5	44	8	75	13	17.3	0	.....
Shoulder	30	2	42	2	72	4	5.6	19	3
Tenderloin	31	2	19	2	50	4	8.0	18	4
Sum	275	37	298	45	573	82	.....	101	27
	13.5%		15.1%			14.3%		26.8%	

households yielded the following Salmonella types: liver—*S. typhimurium* 5, *oranienburg* 1, *montevideo* 1, *bareilly* 1, *pullorum* 5, *gallinarum* 1, *give* 1, *lexington* 1; meat—*typhimurium* 6, *derby* 1, *bredeney* 1, *oranienburg* 2, *newport* 1, *pullorum* 5, *panama* 1, *anatum* 2, *meleagridis* 1; liver and meat—*typhimurium* 4, *bredeney* 1, *oranienburg* 2, *newport* 1, *pullorum* 5, *gallinarum* 1, *anatum* 1, and *minnesota* 1.

The eggs yielded *S. bareilly* 2 and *S. oranienburg* 1; while from the egg powder samples, *S. derby* 1, *S. montevideo* 1, and *S. panama* 1 were isolated.

Samples of inspected pork showed an entirely different distribution of Salmonella strains: brains—*S. typhimurium* 1, *derby* 1, and *choleraesuis* 8; chops—*typhimurium* 2, *bredeney* 1, *choleraesuis* 4, and *anatum* 1; kidneys—*typhimurium* 1; liver—*typhimurium* 2, *derby* 1, *bredeney* 1, *choleraesuis* 23, *muenchen* 1, *newport* 1, *give* 1, *senftenberg* 1, and *worthington* 1; loin—*typhimurium* 1, and *choleraesuis* 4; ribs—*choleraesuis* 3, *anatum* 1, and *senftenberg* 1; fresh sausage—*typhimurium* 2, *derby* 1, *bredeney* 1, *choleraesuis* 8, and *kentucky* 1; shoulder and tenderloin each harbored *typhimurium* 2, and *choleraesuis* 2.

From uninspected pork, the following Salmonella strains were isolated: chops—*S. typhimurium* 1, *paratyphi* B and *senftenberg* 1, and *choleraesuis* 5; liver—*typhimurium* 1, *derby* 1, and *choleraesuis* 7; loin—*typhimurium* 1, and *choleraesuis* 1; ribs—*typhimurium* and *choleraesuis* 1, and *give* 1; shoulder—*choleraesuis* 3; and tenderloin—*choleraesuis* 3, and *kentucky* 1.

The only Salmonella isolated from beef was one *S. typhimurium* strain.

Hamburger hash yielded the following types of Salmonella: *S. typhimurium* alone 3, *typhimurium* and *derby* 1, *typhimurium* and *choleraesuis* 1, *bredeney* 1, *choleraesuis* alone 5, *montevideo* 1, *oranienburg* 1, *newport* 2, *anatum* 2, and *senftenberg* 1.

DISCUSSION

There was a significant difference between the total number of Salmonella strains isolated from inspected and from uninspected poultry and pork. Uninspected birds yielded Salmonella about 12 times more often than U.S. inspected fowl. Uninspected pork harbored Salmonella only about 1.8 times more often than U.S. inspected pork.

Statistical evaluation of the findings, with the aid of the 2 by 2 table and the X^2 test showed that there is a significant difference ($P<0.01$) between fowl samples collected in households and material from poultry taken to the laboratory directly from stores. This difference may be caused by the possible contamination of the edible parts of the birds with the intestinal contents during unskilled evisceration and dressing by housewives. An inquiry into the influence of manipulation on the frequency of Salmonella in the edible parts of birds, suggested to us by Dr. A. V. Hardy, is under way.

Kessel *et al.*[18] proved in their statistics on salmonellosis in California the thesis of Hinshaw *et al.*[9] and Edwards *et al.*[10] that the frequency of human salmonellosis in this country fluctuates with the disease in poultry. Table 3 shows a comparison of the relative frequency of Salmonella more common in poultry and pork with the same strains in man according to our material. The statistics in man were derived from strains which reached our typing center from several private and state hospitals, as well as from Cook County Hospital in Chicago. They do not necessarily represent the average picture in Illinois. The food samples, however, were collected in the neighborhoods and areas in which the patients of these hospitals live. In spite of the shortcomings, our statistics from human of Salmonella organisms in birds, with the striking exception of *S. pullorum*. This organism, while found to cause human disease,[2, 11, 13, 18] is rather infrequently reported beings seem to approach the distribution from man.

TABLE 3—Distribution of the Most Frequent Salmonella Strains

Organism	Salmonella isolated from same source (%)		
	Poultry	Pork	Man*
S. typhimurium	25.9	15.4	28.9
S. derby	2.4	4.5	4.7
S. bredeney	3.7	2.1	1.6
S. choleraesuis	0	65.9	4.2
S. oranienburg	11.1	0	6.3
S. newport	3.7	1.2	2.6
S. pullorum	19.6	0	1.0
S. anatum	4.8	2.2	2.6
S. senftenberg	2.4	3.3	2.1
Other types	26.4	5.4	46.0**

*Data for midwestern U.S.A.[23]
**Includes *S. typhosa*, 8.4.

Individual eggs represent the product of 1 hen and the examination of such samples is a true random sampling procedure. On the other hand, egg powder is frequently a mixture of products from several flocks or hatcheries. It is, therefore, more easily the source of a Salmonella strain when studied in the laboratory, than is the individual egg.

The samples of "hamburger hash" were collected during the war. Chopped meat was found a frequent source of Salmonella[25, 26]. We did not attempt to determine the kinds of meat present in these samples loosely designated as "hamburger," nor does the

distribution of the isolated Salmonella strains permit a conclusion concerning their composition. Laws and regulations concerning correct labeling of such meat, which is often mistaken by the general public for hamburger hash, are being strictly enforced at present. The more extensive use of U.S. inspected and passed products, sold in properly marked containers, which consist only of beef and suet will surely eliminate this source of salmonellosis, with special regard to the fact that beef, according to our survey, only rarely contains Salmonella.

Table 2 proves that hog brains, chops, and liver frequently contain Salmonella. This has already been shown.[9] We found a high number of *S. choleraesuis* strains both in inspected and uninspected pork, but not in man. This may be influenced by the fact that many of our Salmonella strains were isolated from patients in Jewish hospitals. In addition, pork brains, rich in Salmonella, are rarely consumed by Americans.

Statistical studies do not show a significant difference between pork samples collected in shops and pork samples from homes, probably because market pork is separated from organs (intestines and mesenteric glands) containing most of the Salmonella organisms under proper supervision and seldom in shops. Moreover, careful evisceration of hogs is much easier than that of poultry, because of the size of the animals.

Preliminary studies of outbreaks of human salmonellosis in which the source could be ascertained showed the influence of the mode of preparation of the food and also the role played by the respective Salmonella strains in such outbreaks.[9] *Salmonella choleraesuis* is often very sensitive to heat and is frequently destroyed by the relatively low temperatures, e.g., by such as prevails in the inner part of grilled pork chops, while *S. typhimurium* is much more resistant. In our experience, boiled and stewed poultry never caused salmonellosis, while fowl prepared with insulating stuffings often conveyed this infection. A detailed report, with experimental data on this problem, will be given in a food journal.

SUMMARY

All 1,000 samples of pasteurized grade A milk were found free from Salmonella. Only 1 of the 512 beef samples yielded this organism. Of the 500 eggs and 100 samples of dried egg powder, 0.6 and 3.0 per cent, respectively, harbored Salmonella. Of 327 U.S. inspected and passed birds and 748 uninspected birds, 0.9 and 10.8 per cent, respectively, yielded these bacteria. Salmonella strains were isolated from 14.3 per cent of the 573 U.S. inspected and passed, and from 26.8 per cent of the uninspected, pork samples. These organisms were also present in 17.6 per cent of the hamburger samples. The implications of these findings were discussed.

References

[1]Darby, C. W., and Stafseth, H. J.: Salmonella Infections Common to Man, Animals and Birds. Proc. 46th Ann. Meet. U.S. Livestock San. A., (1942): 189-202.

[2]Edwards, P. R., and Bruner, D. W.: The Occurrence and Distribution of Salmonella Types in the United States. J. Infect. Dis., *72*, (1943): 58-67.

[3]Hinshaw, W. R., McNeil, E., and Taylor, T. J.: Avian Salmonellosis. Am. J. Hyg., *40*, (1944): 267-278.

[4]Rubinstein, A. D., Feemster, R. F., and Smith, H. N.: Salmonellosis as a Public Health Problem in Wartime. Am. J. Pub. Health, *34*, (1944): 841-853.

[5]Varela, G., Zozaya, J., and Olarte, J.: Investigacion de Salmonelas en Pollos Normales. Rev. Inst. Salubr. Enferm. Trop., *5*, (1944): 11-14.

[6]Simeone, D. H.: Investigacion de Bacterias del Genero Salmonella en los Huevos de Aves. Bull. Vet. Inst. Buenos Aires, *2*, (1944): 1-35.

[7]Watt, J.: An Outbreak of Salmonella Infection in Man from Infected Chicken Eggs. Pub. Health Rep., *60*, (1945): 835-839.

[8]Schneider, M. D.: Isolation of Salmonella Tennessee from Frozen and Powdered Egg. Bull. U.S. Army Med. Dept., *4*, (1945): 477.

[9]Monteverde, J. J., and Simeone, D. H.: Salmonelas Distintas de S. Pullorum y S. Gallinarum en Aves "Reaccionantes." Rev. Fac. Agron. Vet. Buenos Aires, *11*, (1944): 31-41.

[10]Chase, F. E., and Wright, M. L.: The Occurrence and Distribution of Salmonella Types in Fowl. Canadian J. Res., F, *24*, (1946): 77-80.

[11]Mitchell, R. B., Garlock, F. C., and Broh-Kahn, R. H.: Outbreak of Gastroenteritis Presumably Caused by Salmonella Pullorum. J. Infect. Dis., *79*, (1946): 57-62.

[12]Gordon, R. F., and Buxton, A.: Dried Egg and Salmonella. Brit. Med. J., *1*, (1947): 898.

[13]Edwards, P. R., Bruner, D. W., and Moran, A. B.: Further Studies on the Occurrence and Distribution of Salmonella Types in the United States. J. Infect. Dis., *83*, (1948): 220-231.

[14]Brandly, P. J.: Poultry Inspection as Part of the Public Health Program. J. A. V. M. A., *112*, (1948): 10-17

[15]Perelli-Minetti, J. E., Rucker, J. C., and Ross, F. K.: Paratyphoid. Bull. Dept. Agric., California, *37*, (1948): 151-156.

[16]Felsenfeld, O., Gonzalez, L. M., and Young, V. M.: Studies on Salmonellosis in Puerto Rico. Puerto Rico J. Pub. Health & Trop. Med., *24*, (1948): 9-15.

[17]Rubin, H. I., Scherago, M., and Weaver, R. H.: Occurrence of Salmonella in Lymph Glands of Normal Hogs. Am. J. Hyg., *36*, (1942): 43-47.

[18]Levine, N. D., Peterson, E. H., and Graham, R.: Studies on Swine Enteritis. Am. J. Vet. Res., *4*, (1945): 242-247.

[19]Cherry, W. B., Scherago, M., and Weaver, R. H.: Occurrence of Salmonella in Retail Meat Products. Am. J. Hyg., *37*, (1943): 211-215.

[20]Quiroga, S. S., and Monteverde, J. J.: Investiga-

ciones de Salmonelas en los Ganglios Mesentericos de Cerdos Normales. J. Agron. Vet., *1*, (1942): 69-82.

[11]Pestana, B. R., and Rugal, E.: O Porco Normal Como Portador de Salmonella. Rev. Inst. Adolfo Lutz, *3*, (1943): 232-241.

[12]Barsini, G., and Forconi, V.: Sulla Frequenza delle Salmonelle negli Organi di Suini. Boll. Inst. Sper. Med., *25*, (1946): 254-256.

[13]Felsenfeld, O., and Young, V. M.: Studies in Salmonellosis in North and South America. Am. J. Trop. Med., *29*, (1949): 483-491.

[14]Kessel, J. F., Parrish, M., and Cavell, K.: Shigella and Salmonella Encountered in Southern California. J. Bact., *49*, (1945): 522-523.

[15]Felsenfeld, O., and Young, V. M.: Occurrence of Members of the Genus Salmonella in Inhabitants of State hospitals of the Greater Chicago Area. J. Lab. & Clin. Med., *29*, (1944): 375-382.

Biological Warfare from the Veterinarian's Standpoint

"There is no justification whatever for some of the predictions of vast potentialities and dire results inherent in biological warfare, but, on the other hand, an attitude of complete complacency and the assumption that nothing of consequence could be accomplished through such warfare would be a mistake."

Dr. R. A. Kelser, dean of the University of Pennsylvania veterinary school and former chief of the Army Veterinary Corps, gives these and other pertinent views on biological warfare in a publication of that university (Univ. of Pa. *Vet. Ext. Quart. No. 115*, June 16, 1949).

These points are emphasized:

1) Veterinarians would have a vital part in test-tube war because farm animals would be a likely target. Distributing contaminated or infected feed to animals would offer less difficulty and less risk of detection than would be the case with man. Moreover, livestock ordinarily are maintained in large herds and flocks in which virulent organisms could be disseminated rapidly.

2) Air travel has increased the danger that exotic diseases may gain entry, and it would be difficult to prove whether a given disease was introduced accidentally or intentionally.

3) Planned warfare with germs would favor the selection of a disease known to cause high morbidity and high mortality, but the effort could abort if the disease failed to follow its characteristic pattern when artificially introduced, as some diseases do. Bovine hemorrhagic septicemia is an example. Rinderpest and foot-and-mouth disease are known and important exceptions; both can be spread just as effectively by artificial as by natural means.

4) Good strategy would dictate the introduction of a foreign disease, mainly because veterinarians and livestock owners might be slow to recognize it and would not be equipped to combat it immediately. On the other hand, much also could be accomplished by accelerating the spread of an indigenous disease, in which case sabotage might not be suspected.

5) Test-tube warfare on livestock would increase veterinarians' responsibilities in meat and dairy inspection.

6) Veterinarians should expand their knowledge of foreign plagues, so as to be prepared for responsibilities they may have to shoulder in the future.

7) The military service initiated research on foreign diseases—Newcastle disease (avian pneumoencephalitis), fowl plague, and rinderpest—during World War II because it feared that aggressors might resort to biological warfare. Continuing research along this line is essential to the nation's security.

Suspect Variant Virus Caused Hog-Cholera "Breaks"

The U. S. Bureau of Animal Industry has reported that a new form or variant type of hog-cholera virus "never before recognized" may have been responsible for recent middlewest losses in swine immunized with serum and virus.

Bureau tests of immunizing products used on swine herds showed that regular serum alone provided adequate protection against the regular hog-cholera virus but failed to protect adequately against this variant. However, pigs immunized with both serum and virus were found to be completely resistant to the virus containing the variant. This suggests, according to the Bureau, that the variant is not much different from regular virus.

Extraneous viruses or bacteria were not incriminated, and Bureau investigators said there was no reason to suspect errors in manufacture or testing of products involved in the outbreaks.

Feline Gastroenteritis (Panleucopenia).—Early use of serum is the best treatment for feline gastroenteritis (panleucopenia). It also is advisable to give repeated injections of penicillin along with the serum, even beyond the time the infection is under control, so as to prevent relapses and secondary infections. Administration of tissue vaccine is the best preventive measure.—*L. H. Fairchild, Cats Magazine, March,* 1949.

The Work of the Chemical-Biological Coordination Center in Relation to Chemotherapy in Veterinary Medicine

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CHEMOTHERAPY originally meant, in the strict sense, the prevention or treatment of disease by sterilization of the "causative parasite" by chemicals without producing any toxic effect on the host; the treatment of conditions such as cancer, goiter, anemia, rickets, and symptomatic conditions by medicinal substances has broadened this initial concept and made the definition now a vague one.

CHEMOTHERAPY—HISTORY AND DEVELOPMENT

In this sense, the history of chemotherapy dates back to ancient times, for some vegetable substances used today (e.g. male fern) were known to the Greeks; in the sixteenth century, quinine was discovered to be a specific for malaria, and the chaulmoogra plant was known to have some effect on leprosy. Thus, for 2,000 years, chemotherapy was herbal therapeutics. Compared with the few useful drugs discovered, there were hundreds of others which were useless and now simply belong to the folklore of pharmacy and medicine.

Nearly all medical authorities of sixty years ago thought that "inner disinfection" of the body was impossible. The pioneer of chemotherapy proper was Ehrlich, with whom must be linked the names of Pasteur and Koch, because it was the discovery of bacteria as the causes of disease which stimulated efforts to cure infectious and contagious illnesses. Weigert must also be given a place of honor, as he was one of the greatest geniuses in the pathologic field; he initiated pathologic technique by the simple stroke of transferring textile dyeing methods to staining tissues and bacteria, thus making possible histology and pathology as we know it.

Ehrlich was originally trained in the pathologic school and was influenced by the techniques of differential staining of tissues evolved by Weigert, out of which Ehrlich founded what ultimately became three new sciences, *viz.*, hematology, immunology, and chemotherapy. His separation of the types of leucocytes by their staining properties, and the discovery of a stain for the tubercle bacillus, were outstanding contributions. His cellular studies on blood laid the foundations for present hematologic differentiation of disorders of blood-forming organs. Dyes also furnished the medium for his work in chemotherapy. Studies on intravital staining led him to synthesize dyes which might have some selective affinity for organisms within tissues, from which ultimately came his discovery of salvarsan, the antisyphilitic—(606). Since that time, a tremendous amount of work has been devoted to chemotherapy, but, until about 1930, it had been developed particularly in Germany where vision and faith must have been required originally to recognize that work must be based upon research in organic chemistry.

In Germany, the concentration of chemical effort in dyestuff research and manufacture made this the natural birthplace of what is now the synthetic drug industry. The discoveries by the Germans, which cannot be overestimated, have been of immense medical importance. The most noteworthy are aspirin, the antimalarials, plasmoquine and atabrine (without which World War II could not have been waged in the tropics), salvarsan, prontosil, and the trypanocide, Bayer 205.

As late as 1921, Sir Henry Dale emphasized that, despite the early concepts of Ehrlich, no fundamental advance had been made in our knowledge of chemotherapy. By 1935, the total achievements were the discovery of the two synthetic antimalarials, six types of trypanocidal substances, an antisyphilitic, and some new antiseptics of the flavine series. In that year, a complete change in outlook arose after the discovery by Domagk in Germany of prontosil. In the same year, Fourneau showed that prontosil was broken down in the body into sulfanilamide, and that this was the active part of the molecule.

These advances stimulated research by chemists and biologists all over the world. Since then, more than a thousand related compounds have been tested experimentally and the more promising used in clinical trials with natural bacterial infections of man and animals. From this welter, there remains a limited number in common use, some possessing advantages over the others in specified conditions, e.g., sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine, sulfamethazine, and sulfaguanidine. The remarkable discovery, by Florey and Fleming, of penicillin revolutionized ideas on the treatment of infections and opened up the field of antibiotics.

METHODS OF EXPERIMENTAL CHEMOTHERAPEUTIC RESEARCH

There are two main aspects of chemotherapy—organic chemistry and biology. Experimental chemotherapeutic investigations are still mainly empirical, for little is known about the action of drugs which can be related to chemical constitution, although many theories have been evolved. This usu-

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ally has meant that large numbers of chemical compounds were synthesized and screened before success was achieved, and that there are limited ways in which experimental chemotherapeutic investigations can proceed.

1) The chemist can modify the structure of compounds known to have some activity in attempts to increase this and at the same time reduce any potential toxicity. A good example of this is the way in which the synthetic antimalarials (atabrine, plasmoquine, paludrine, and others) were discovered.

2) Large numbers of new compounds can be made, or "lifted off the shelf," and the biologist can then subject these to the widest possible screening for pharmacologic-physiologic-pathologic evaluation. This leaves a large element of chance as every compound obviously cannot be tested against all types of experimental disease or physiologic action. Effort may then be concentrated to cover types of disease which represent larger groups, while the importance of the problem may be a guiding factor in selecting fields for evaluation of drugs.

Diseases of both man and lower animals caused by bacteria, viruses, protozoa, and worms play an immense part in interference with health, and, therefore, continue to occupy a prominent place in chemotherapeutic research. Work in these fields cannot be divorced from pathology because, in all chemotherapeutic work, the success of the biologist is attendant upon the availability of experimental disease in laboratory animals which can be used to evaluate activity of new compounds. As a basis, therefore, we must have a thorough pathologic understanding of the nature and course of any particular disease in the natural host and in the experimental animal. Considerable effort has, thus, often been expended by pathologists and bacteriologists devising new techniques to study disease in the experimental animal.

3) Advances in other fields of medicine may contribute largely, e.g., knowledge of the vitamins. Certain diseases of man were first identified as clinical and then as pathologic entities, e.g., rickets and scurvy; later, it was shown that these could be produced experimentally in animals by deficient diets, and that the responsible deficiency factors were vitamins, in the old sense. Finally, chemists have synthesized many vitamins, and pure chemical substances (e.g., calciferol and ascorbic acid) are now used in therapeutics. Advance may also arise by direct methods of clinical observation as exemplified by the work which followed Minot's observations on the use of liver in the treatment of pernicious anemia.

There are many diseases for which, however, there is as yet no successful chemotherapy; this failure may have a biologic foundation, in that the disease may be incapable of transmission to a suitable test host, or that there is no analogous infection available. The use of analogous infections is an important technique, and, in the past, has proved a most fertile source for chemotherapeutic discovery. For example, malaria (human) cannot be transmitted to laboratory animals. Without the identification of forms of spontaneous malarial infections in birds (canaries, finches, and fowl), and the use of these infections in screening tests, atabrine, plasmoquine, and paludrine could not have been discovered. (In the attempts of the I. G. Farben Company, Germany, to discover new antimalarials, nearly 12,000 compounds were tested in the course of twenty years, *i.e.*, until the advent of plasmoquine in 1924.)

Much has been achieved in the control and treatment of streptococcic, staphylococcic, and other bacillary infections, as much is known about the pathogenesis of these forms of experimental infections in small animals. In screening work on streptococcic infections, mice can be used as test hosts and only small quantities of speculative compounds are necessary. Results can be evaluated quickly, as the infection is lethal and a mortality curve can be used as a yardstick in assessing the relative activities of drugs. There are, however, many diseases caused by bacteria, viruses, protozoons, rickettsiae, or worms which cannot be investigated so simply from the point of view of chemotherapy; outstanding examples of veterinary importance are bovine mastitis, Johne's disease, brucellosis, canine encephalitis, parasitic, and many protozoan, diseases. Until new biologic techniques are available, therefore, it is unlikely that advances will be made unless by analogy, *viz.*, from the application of therapeutic advances in human medicine.

How Veterinary Chemotherapeutic Discoveries Have Been Made.

It is useful to recapitulate the various ways in which advances have been made in veterinary chemotherapeutics in the past. Although this division is artificial, they fall into a few broad categories. Each approach, or method, has been of value if measured by results, and will continue to be used until more is known about chemical structure and mode of biologic action.

Empiricism.—Animal therapeutics is as old as medicine itself. There would, thus, be no difficulty in formulating a long list of useful drugs which have been found by trial and error. The use of nicotine-copper sulfate and carbon tetrachloride as

anthelmintics, sulfur for mange, zinc compounds for dermatitic conditions, potassium iodide for actinomycosis, mercurials and some arsenicals for trypanosomiasis, all come readily to mind. We need not despise this method; some of these discoveries have been of great use and, in any case, shrewd observation must also have been necessary regarding effect on any given condition.

Method of Direct Observation.—The discovery that the tetany of milk fever was due to lowered blood calcium levels led to the adoption of intravenous calcium therapy. A more dramatic instance, however, lies in the discovery of the importance of the trace elements for the maintenance of normal health, and of the pathologic effects due to their absence. In England and Australia, certain diseases of sheep were identified many years ago, clinically and pathologically, *e.g.*, pine (anemia) and swayback (a form of cerebral demyelination). Much ground work on the pathology and chemical pathology of these conditions was necessary before it was discovered that the lack of cobalt and copper, respectively, played a vital part in the pathogenesis of these entities.

The story of dicumarol is another example, as the identification of a form of hemorrhagic diathesis in cattle (sweet clover disease) was the primary observation that led to the chemical isolation of a substance which can now be used medicinally to combat postoperative clotting.

Analogy and Imitation.—In general, chemotherapeutic research, particularly in industry where it is largely concentrated, follows along well-worn paths set by tradition established by the Germans. Because of the value placed upon human life, and because of potential financial profit derived from the discovery of outstanding medical drugs, there is a considerable bias in chemotherapy to work which is essentially, and primarily, of medical importance. The natural outcome of any laboratory discovery, whether it be a bactericide, trypanocide, anesthetic, or estrogenic agent, is for this discovery to be transferred to clinical application in human medicine as soon as possible. In the end, this is the crucial test, and many drugs with promise at the laboratory stage fall by the wayside when finally tested in the hospital. Subsequent to this, possible veterinary uses may be considered.

There is nothing inherently wrong with this, because the same laboratory technique might be used for the initial evaluation of drugs whether intended for medical or veterinary uses. There may, however, be some time lag between clinical medical, and veterinary, application. Examples of this are to be found in the history of the development of sulfonamides and penicillin. When medical observations had established their unique properties, a flood of literature appeared thereafter, concerning the pharmacology and therapeutics of these substances in domesticated animals. In this same class can be placed such substances as the estrogenic compounds, the barbiturates, volatile anesthetics, and detergents.

The final use of many such substances in veterinary work far outstripped all ideas of use the primary inventor may have had in mind. This method can never be ignored, and it behooves us to take care that recent advances in medical therapeutics are not overlooked. There are, however, dangers associated with paying too strict attention to the effects of drugs in man as compared with what might happen in animals. It is, in fact, unreliable to transfer data regarding action of any drug from species to species. If great reliance had been placed on the reports that 4,4″ diamino-diphenyl sulfone had a high degree of toxicity for man (and mice), there is little doubt that the drug would never have been tested in cows, in which it is well tolerated and in which it has shown an effectiveness against certain forms of mastitis.

Medicine may, on rare occasion, borrow from the veterinary field. The discovery of phenothiazine as an anthelmintic for animals was the stimulus to investigate its effectiveness against threadworms in children, although its occasional toxicity in children has precluded its widespread use. The discovery of the chlorinated hydrocarbons (carbon tetrachloride and tetrachloroethylene) for the removal of hookworms in dogs found a wide application for the treatment of hookworm disease of man throughout the tropics and subtropics.

Accident.—Many discoveries have been primarily accidental, but we need not minimize the value of such original observations. Phenothiazine was known in the dyestuff industry as early as 1885, but its use as an anthelmintic had to await observations, in 1935, that it had an action on culicine larvae, and it was not until 1939 that speculation arose regarding potential activity against parasitic worms. Advances, thereafter, were rapid and showed it was the most outstanding anthelmintic discovered for more than thirty years. Trypan blue, which for a long time was used extensively for the treatment of piroplasmosis, is said to have been originally discovered by Nuttall in attempts made to stain Babesia in the blood stream. Many other chemical compounds now on laboratory shelves might also prove of value if suitable biologic investigations were made.

Specific Experimental Approach.—As chemotherapy has developed in the hands of industrial firms in Great Britain and the United States, it is quite apparent that, at the outset, little provision was made for a specific study of veterinary problems. It may have been thought that, as there are so many diseases common to man and animals, results specifically obtained from laboratory investigations designed to meet medical needs would also indicate possible veterinary application. This policy is justified to some extent, as it reduces the financial outlay for research on the purely biologic side by eliminating the need for using the more expensive, larger domestic animals for experiment. This latter is important because in speculative chemical work for any elaborate screening program, the chemist can prepare only small quantities of compounds; the need for testing techniques involving the smaller laboratory animals (and the smaller the better) is, thus, essential for rapid progress.

Many industrial firms engaged in pharmaceutic

research must have been impressed by the immense and profitable field, viewed in terms of hard cash, awaiting exploitation in veterinary biological products. This is seen in the fact that there is an increasing number of commercial firms in the United States and Great Britain which have set up special facilities to investigate veterinary problems.

There are many diseases common to man and animals and, to some extent, a uniform approach can be made from the point of view of experimental chemotherapy. There are just as many diseases which are specific for animals and which are of overwhelming importance to the animal health industry which require a special approach, *e.g.*, brucellosis, Johne's disease, certain parasitic conditions, anaplasmosis (and other protozoan diseases of animals), bovine mastitis, anaërobic toxemias, and many virus conditions. Laboratory investigations by large-scale screening tests are necessary in the first place but, in the end, controlled work on domestic animals (with natural or artificial infection in the natural hosts) is necessary before large-scale field trials should be contemplated.

Since these routes to success have been used in the past, there is no reason to believe that advances will not come in the same way in the future, until more is known about chemical structure and biologic action. At present, there is a limited number of drugs which have a specific therapeutic action on infections, or a physiologic one on some organ. For these discoveries to have been made, there must have been many hundreds of thousands of chemical compounds prepared as a deliberate effort, or lifted off the shelf for screening against a variety of test objects. All compounds cannot be tested against "all things," and the structures of the bulk of negative compounds are never revealed in print. The question might then be asked, just how many have suffered the same original fate as phenothiazine, sulfanilamide, benzene hexachloride, and DDT, which were synthesized years before any specific biologic action was noted. There may be many potential CNS depressants, antimalarials, bactericides, worm killers, or anesthetics lying in dust-covered bottles on the shelves of many chemical laboratories.

A short description of the Chemical Biological Coördination Center may, thus, be helpful to veterinarians to show how this institution may ultimately help to eliminate empiricism and accident, and espouse the more scientific method of direct chemicobiologic approach to problems of importance in the control of animal disease by chemical means.

HISTORY OF THE CHEMICAL-BIOLOGICAL COÖRDINATION CENTER

The Chemical-Biological Coördination Center was started in July, 1946. It might be emphasized that it is not a research foundation, nor does it subsidize research. It was an outgrowth of the OSRD* Insect Control Committee which had the responsibility, during World War II, of coördinating work in the problems related to insect and rodent control carried out at the request of the armed forces. More than 8,000 compounds were tested as insecticides, and about 1,500 as rat killers, which led to the discovery of ANTU and 1080 (sodium fluoroacetate).

Other groups were also engaged in testing chemicals for various biologic actions. Thus, the Malarial Committee of the National Research Council sponsored the testing of about 15,000 antimalarials; Chemical Warfare Service was interested in testing potential chemical war weapons; other projects were designed to cover the testing of compounds for their actions against bacteria and fungi which cause destruction of fabrics, metals, glass, and leather. In the field of tropical diseases, much effort was expended on testing compounds which might be effective against schistosomiasis, leishmaniasis, and amoebiasis. These items are mentioned to indicate the magnitude of effort during the war and do not include the projects which must have been carried out by industrial firms before the war and now in similar and related fields.

It occurred to Dr. M. C. Winternitz, chairman of OSRD Insect Control Committee, that an organization might be established which would assemble, in an organized form, data on chemical structure related to biologic action which had resulted from these war-time programs. This, however, would, in the future, aim to include all data on this subject published in the scientific literature. Obviously, a long-term view was taken, for the full maturation of any such scheme might take years to accomplish.

SUMMARY

The objectives of the Chemical-Biological Coördination Center are:

1) To assemble and organize information which relates the effect of structure of chemicals to their biologic activity. In order to facilitate the handling of the large mass of data that will be accumulated, there are being developed:

a) Special sheets for the recording of biologic data and physical properties of compounds.

b) Biologic and chemical codes which will enable the data from the work sheets to be placed on punched cards and sorted mechanically by machines when correlation studies are to be made.

2) To sponsor the preliminary testing (screening) of chemicals on a variety of animals and plants to determine the biologic effects of the compounds. Present screening facilities permit subjecting compounds to biologic tests for their action as insecticides, insect repellents, rodenticides,

*Office of Scientific Research and Development.

bactericides, fungicides, plant-growth regulators, and chemotherapeutic agents against cancer, malaria, tuberculosis, and other diseases.

3) To prepare reviews of the literature:

a) On the effect of chemical structure upon various biologic actions.

b) On test methods used in the study of such actions.

An extensive abstracting service is being set up which will cover all important medical, veterinary, and biologic journals. Data regarding both the chemical and biologic aspects are placed in summarized form on work sheets. These sheets are filed by an individual serial number which is assigned to the compound and which contains, in the first digit, information regarding the chemical elements present. In order to record the data on punched cards, chemical and biologic codes have also been developed. The serial number of the compound, the chemical code indicating the structural groups present, and the biologic code giving the biologic actions under broad headings are recorded on a single I.B.M. punched card. With a large number of such cards available, it will be possible to carry out correlation studies of chemical structure *vs.* biologic activity using standard sorting machines which sort more than 20,000 cards per hour. The study may be approached from either the chemical or biologic angle. The machines may be asked to segregate cards representing compounds containing certain elements or a certain number of atoms of certain elements, or compounds which possess certain structural units or certain ranges of physical properties. Thus, in an experimental run of over 500 cards, representing a variety of chemical compounds, the machine rapidly segregated three sulfanilamides, which were the total number present, when requested to do so.

By appropriate sorting procedures, it might ultimately be possible to answer questions as to which compounds are effective against any given animal infection, e.g.: Which sulfonamides have been tested against coccidiosis? Which drugs, found to be effective against coccidiosis, have also been tested against nematodes? What are the toxic effects of certain insecticides used in animals? Is there any information *re* the carcinogenicity of DDT? Do any of the thiocarbamic acids show any fungicidal or bacteriostatic action?

A screening program is being sponsored which will provide considerable data on the chemical and biologic properties of compounds and may also lead to the discovery of important practical uses for some compounds. Thousands of compounds are stored on the shelves of university, government, and industrial laboratories. A large percentage of these have never been tested for any possible use, while a small percentage may have been tested for a single purpose. The Chemical-Biological Coördination Center has made arrangements with 26 agencies for testing of chemicals, submitted to the Center, for their action on a wide variety of animal and plant life. To date, about 4,000 compounds have been made available for such screening tests, and 1,000 are now in the process of being tested. The biologic data on the compounds which were first received are just beginning to arrive.

As was mentioned at the start of this paper, screening programs in this country met with considerable success during the war. The Germans also conducted a large-scale screening program before, and during, the war, which led to the discovery of important new chemical warfare agents, insecticides, rodenticides, and pharmaceutical agents. It is hoped that the initiation of a broad screening program in the United States will provide a means for avoiding a repetition of the fate of compounds such as DDT and the sulfanilamide drugs, uses for which were not discovered until many decades after their synthesis.

Baby Pig Losses

Baby pig disease has been used as a sort of diagnostic waste basket into which a wide variety of conditions has been placed. The so-called "normal losses" of baby pigs were studied. Of 236 pigs which died before weaning, 184 died during the first week. Autopsy records on all pigs that died, and 49 born dead, were classified as follows (some pigs showing two or more conditions):

Nutritional and metabolic	114
Prenatal influences	87
Traumatic and accidental	75
Miscellaneous	26
Infection and inflammation	21
No cause determined	12

The 106 sows involved in this study were kept under very good or excellent conditions and weaned 622 pigs.—*C. C. Morrill, D.V.M., Illinois.*

Veterinarians in Furbearing Animal Work.—Commenting on the addition of a course in furbearing animal diseases to the senior veterinary curriculum at The State College of Washington, *American Fur Breeder* (Feb., 1949) said: "Our industry has long felt the need for veterinarians who have special training in this work."

Dystocia in the Sow

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THIS DISCUSION will not be technical. In it, I will attempt to describe and demonstrate the methods used in handling the various problems presented by dystocia in the sow. We all realize that there are many predisposing factors influencing dystocia, but, due to limited time, no attempt will be made to discuss these factors.

We will go directly to the hog house at farrowing time. Swine obstetrics is similar to most problems with which a veterinarian deals, in that no two cases are exactly alike. Many variations in the methods and equipment used have been developed to meet those different needs. Success depends on ingenuity, good judgment, having instruments that are suitable for the occasion, and an ecbolic that will keep the pigs within reach.

It is convenient and time-saving to carry in a single case the instruments and equipment commonly used for handling a dystocia. This is taken to the farrowing pen. In most hog houses, there will be an extra panel or a couple of boards that can be placed across the corner of the farrowing pen for a table on which to set the case and make a convenient bench.

EQUIPMENT

Equipment will vary with the operator. The instruments commonly employed in my practice are: (1) Knowles uterine forceps; (2) a sharp, pointed hook; (3) a cable obstetric snare; (4) equine catheter; and (5) miscellaneous small equipment.

The drugs most frequently used are: (1) ecbolics; (2) stilbestrol; (3) penicillin; (4) sulfonamides; (5) lubricants; and (6) antiseptics. The ecbolic that has been by far the most satisfactory, in my experience, is posterior pituitary extract. I realize the value of this product, as an aid in dystocia, has been questioned by some sources, but no other ecbolic has served me as well. The penicillin product of choice for parenteral use is procaine penicillin in oil, because of longer therapeutic action. Mineral oil is used as a lubricant and as a vehicle for carrying sulfathiazole powder as a wound dressing.

My obstetric dress, in addition to my regular attire, consists of: a homemade canvas sleeve protector which slips over the left arm and is pushed up over the rolled-up shirt sleeve, and a strap-on type basketball knee-guard worn on the right knee to protect the clothing as well as to act as padding.

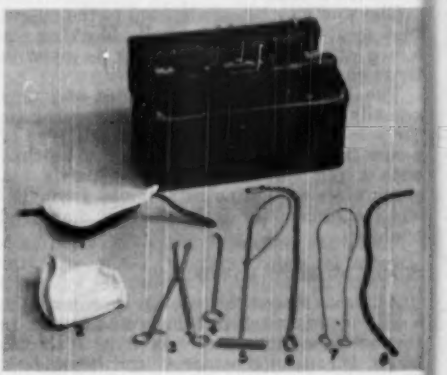

Fig. 1—These instruments and equipment, commonly used for handling dystocia, can be carried in a single case: (1) knee guard; (2) sleeve protector; (3) Knowles forceps; (4) sharp-pointed hook; (5) cable snare; (6) obstetric chain; (7) wire snare; (8) catheter.

PRELIMINARY EXAMINATION

One very important point to be considered in caring for a dystocia in a sow is the size of the practitioner's hands. The individual with exceptionally large hands will necessarily develop different techniques from one having small hands. My hands are small enough to pass through the bony pelvis of most sows. My left hand is slightly smaller than my right; therefore, I like to work with my left hand in the sow. The methods

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described here are influenced by these factors.

Restless sows are restrained in lateral recumbency with the right side up. This is accomplished by looping one end of a short obstetric chain around the metacarpal region of the left front leg and the other end above the left hock.

The genitals are carefully washed and my left arm is lubricated with a suitable antiseptic lubricant powder before the examination begins. Special attention is paid on the first examination to determine if the vagina has been previously injured and the extent of any injuries present. The client should be informed of the injuries at this time. He or the herdsman may have been playing midwife, causing the damage, and a little explanation now may save misunderstandings later on.

After the preliminary examination, unless there is an extremely small juvenile pelvis, or a partially occluded pelvic lumen due to an old pelvic fracture, we almost routinely administer 3 to 5 cc. of posterior pituitary extract deep in the ham with a 2½- or 3-in., 19-gauge needle.

The sow may be constipated to the extent that fecal balls are practically blocking the lumen of the pelvis. An enema is given in these cases.

The bladder may be distended and may actually block the pelvic opening each time the sow labors. This is particularly true of a sow that has been in labor for some time with a pig lodged in the bony pelvis. A short piece of equine catheter is a convenient instrument for draining these distended bladders.

SOME CAUSES OF DYSTOCIA

Anterior Presentation.—Quite commonly, a pig is presented anteriorly and lodges in the pelvic cavity simply because it is too large through the chest and shoulders. These pigs may be delivered by grasping the upper jaw with Knowles forceps and applying traction. Some of these pigs may be living, in which case we do not lock the handles. The three sharp prongs of the Knowles forceps give a great deal of traction with a minimum amount of injury to the pig. The forceps are easily applied simply by placing the middle finger in the mouth and the index finger dorsal to the snout, then placing the forceps beside the two fingers. If the pig is dead and a great amount of traction is necessary, the forceps may be thrust further into the mouth and the handles locked. When still more traction is needed, run a sharp hook back over the pig, point down against the pig, and hook it posterior to the scapula. Then, with hook and locked forceps in the same hand, traction is applied. A pint of heavy mineral oil serves as a vaginal lubricant when the vagina is dry.

Examination may reveal a pig being presented anteriorly, which can be reached only with the index and middle fingers because the pelvic opening is too small to admit the passage of the hand and the pig is too far anterior to the brim of the pelvis to be grasped with the Knowles forceps. Under such conditions, place the middle finger in the pig's mouth and index finger dorsal to the snout. With the right hand, slide the sharp hook along the medial surface of the left forearm and wrist with the point resting on the forearm and wrist to protect the sow. Slide the hook forward along the side of the index finger, and hook the pig in the dorsal part of the snout. Then, grasp the ring of the hook and the left forearm with the right hand, apply traction, and pull the pig's head through the bony pelvis. By leaving the left hand in the sow and pulling on the hook and forearm you will practically never tear the sow if the hook pulls out. Once the pig starts through the bony pelvis, remove the hook and attach the Knowles forceps.

In some cases, it is possible to pass the hand through the bony pelvis and feel a pig's head. In these cases, carry a cable obstetric snare with the left hand, open the loop by adjusting the handle with the right hand, place the loop around the pig's neck, and apply traction.

In lieu of a cable obstetric snare, the same pig may be delivered by fashioning a snare from a 44-in. piece of bailing wire doubled, with a finger loop in each end. By guiding with the left hand, and pushing into the birth canal with the right hand, place the loop back of the pig's head. With the snare in this position, hold the wires together ventral to the lower jaw with the left hand and apply traction with the right hand.

Occasionally, a pig presented anteriorly will be lodged upside down in the bony pelvis (dorsopubic). In these cases, apply the Knowles forceps to the upper jaw, repel, rotate 180 degrees, and apply traction.

Posterior Presentation.—Pigs presented posteriorly, and lodged in the pelvis, may be grasped above the hock with the index and middle fingers and traction applied. When it is impossible to pass the entire hand through the pelvis, grasp one leg with the index and middle fingers. Then hold this leg with the Knowles forceps while the other leg is worked into the lumen. Gauze loops or a cable obstetric snare may be placed around the hock in case a great amount of traction is needed to pull the chest and shoulders through the pelvic opening.

Persistent Hymen.—Dystocia may be

caused by a persistent hymen. We simply snip the hymen with scissors, deliver the first pig or two, administer posterior pituitary extract, and leave the sow on her own.

Postmortem Changes.—Dystocia, due to emphysematous or mummified fetus, may be handled with a combination of the already described procedures and liberal amounts of mineral oil. It is important to stay with these sows and get what pigs you can during your first visit, as you will probably get only one opportunity. The vaginal tract is usually quite dry, tears easily, and usually becomes edematous after very little manipulation through it.

Lacerations.—The ventral floor of the vagina may be lacerated, due either to the hands of an unskilled midwife or perhaps, on occasion, to injuries by the canine teeth of a pig. The bladder may prolapse through such a rupture. In these cases, the bladder should be drained with a 14-gauge needle, replaced, and, when all of the pigs have been delivered, the laceration should be sutured. Suturing may be accomplished with a full-curved, nontraumatic needle and needle-holder. Figure-eight the sow's hock in these cases, and elevate the hind quarters about 18 in. After suturing is completed, 1,000,000 units of penicillin in oil are administered, and a suspension of sulfathiazole in mineral oil is dispensed to irrigate the vagina every four hours for three or four days. The prognosis is guarded but quite favorable in these cases, provided parturition was complete when the sutures were placed. If the sow's vagina has been lacerated, she may strain some for the following twelve to twenty-four hours. This should be explained to the client.

Hematomas.—Hematomas of the vulva quite commonly develop during parturition. No treatment is required unless they rupture. Then, hemorrhage should be controlled with forceps, gauze packs, or sutures, and a wound dressing should be applied. From 300 to 500 cc. of hog cholera antiserum may be beneficial to sows which have lost large amounts of blood.

Uterine Inertia.—Some sows with uterine inertia may not respond to posterior pituitary extract when given intramuscularly. These sows may respond immediately to 2 to 3 cc. of this ecbolic given intravenously, through an ear vein. In most cases, there will be a pig pushed up to the pelvis by the time the syringe can be laid aside and the hand and arm prepared for an examination. The intravenous use of posterior pituitary extract may be repeated, if necessary, after twenty to thirty minutes.

Bone Obstructions.—Dystocia may be due to a juvenile pelvis, a pelvis with a lumen partially blocked due to earlier injuries, or a small, rough pelvis resulting from rickets earlier in life. Some sows are small because of immaturity at breeding time, stunting, malnutrition, or disease. Cesarean sections may be necessary in these cases. Cesarean sections are not necessary in a very large percentage of our dystocias, but when they are indicated, we do not hesitate to rely on this method of delivery. If we pick our cases, we can expect good results. This is especially true since the advent of the sulfonamide drugs and penicillin. Cesarean sections should not be used as a desperation operation. There may be exceptions, but, as a general rule, do not consider a half-exhausted sow with a lacerated vagina to be a good subject for this operation. Some of these sows may live, but the percentage of casualties will be great enough to give the operation a black-eye. It may ruin the client's confidence in the operation at some future time when there would be every chance of success. I don't feel justified in wasting my time and my client's money in operations that must be followed with a prognosis that is grave.

In a case where a grave prognosis would follow cesarean section, we feel it is better to pump 1 qt. of a suspension of sulfathiazole and heavy mineral oil into the uterus and administer 20 to 30 mg. of stilbestrol and 1,000,000 units of pencillin in oil. A large percentage of sows treated in this manner will live, especially when only 1 or 2 pigs have not been delivered.

CONCLUSION

A sow that has any undesirable characteristic, such as a small pelvis which may be hereditary, should be marked for slaughter. Also, mark the pigs from such a sow. It is easy for the client to lose the identity of such a sow and her pigs, and keep them for breeding stock. The sow should have no feed for twelve to twenty-four hours after farrowing, but should have plenty of water that is not too cold. A handful of ground feed on top of her water will often quiet her down if she seems hungry and restless. The pigs may get too much to eat and develop scours if the milk flow of the sow is stimulated too rapidly, consequently, the feed should be increased slowly. The sow should be getting all the feed she will eat in about ten days.

The 250-watt, infra-red reflector bulbs have become popular with my clients during the past two years, for supplying heat for baby pigs. A single light may be hung in the corner of each pen about 30 in. above the floor. The pigs soon learn to lie under these lights. Most of my clients prefer these lights to other types of heating systems they have used in previous years. The lights are easily installed or moved if the

hog house is equipped with electricity. They will save a lot of pigs from being overlaid by their mothers.

There are differences of opinion among practitioners concerning the amount of time we should spend in attending a dystocia case. A great many veterinarians remove only the pig causing the trouble when they are called, and leave. It is my practice to stay with the average sow until I feel she is through farrowing. The present price of hogs causes our clients to be pretty anxious about these sows. They appreciate and are willing to pay for our services if we take a little time with them. March and April are pretty busy months for a practitioner in the hog belt. We have quite a number of calls each day and have to keep moving in order to make the rounds by night, or bedtime, as it will be some days. The farmers realize this, and have not been unreasonable in their demands on our time. We have found that we spend approximately one hour per sow, sometimes less and sometimes more, and we feel that each client has a right to expect this much time provided the sow needs our services.

DISCUSSION

CHAIRMAN SMITH: Are there any questions of Dr. Railsback?

DR. E. E. THOMPSON (Virginia): That was an excellent presentation.

Have you had any experience with calcium gluconate in sows with slow labor?

DR. RAILSBACK: I have tried it a few times, but haven't come to any particular conclusion. The fact that I don't use it much might tell you what my experience has been with it.

Infertility in Bulls.—Acute and chronic diseases, nervousness, hereditary abnormalities, endocrine dysfunction, excess fat, morbid conditions of the joints and feet that cause pain when mounting, and overexertion and exhaustion due to running with a number of cows in estrus, all may affect the bull's performance.—*J. South African Vet. M. A., Dec.*, 1948.

Passive Immunity Transference.—Passive immunity is not transferred from the mare to the fetus through the placenta, but is transmitted through the colostrum. The antibody concentration (*gamma* globulin) of the colostrum is higher than that of the mare's blood. It is reduced rapidly after nursing, and may be down to 5 per cent in twelve hours. Ability to absorb immune bodies from the digestive tract diminishes with advancing age, and had been lost at the age of 5 days, in one instance reported by Bruner, Edwards, and Doll.—*Cornell Vet., Oct.*, 1949.

Superovulation and Ovum Transfer in Cattle

Since the average dairy or beef cow produces only about 5 offspring in a lifetime, breeders and owners of outstanding cows have sought to increase the rate of genetic improvement by transferring the fertilized ova from such cows to less desirable ones soon after conception. This would liberate the superior cow for another cycle of ovulation and fertilization, and make it possible to have her initiate the reproduction of 8 to 12 calves a year.

The present report by R. E. Umbaugh in the *American Journal of Veterinary Research*, (Oct., 1949: 295-305) describes some experimental work along these and related lines. Some 750 cows have been used, and it is clearly indicated that no calves have resulted, although there is evidence of fertilization, implantation, and pregnancy in a limited number of the animals.

Superovulation was produced by implanting gonadotropin subcutaneously into the neck. For this, wax pellets containing 1,500 rat units of a sheep pituitary preparation were used, and the best results were achieved when the implant was made shortly after removal of an active corpus luteum. Four days after the implantation, 1,000 rat units, in saline solution, were injected intravenously. Ova were collected twenty-six hours later, and the average number present was 23.4 per cow. Not all of these were recovered, and only a tiny percentage were successfully fertilized and transferred, but this indicates the possibilities. Pellet implants will induce superovulation repeatedly in the same cow, but the optimum interval has not been ascertained.

Best results were achieved when the experimental cows were artificially inseminated, deep in the uterus, and the ova permitted to fertilize in the fallopian tube. An alternate technique was to expose the ovaries, aspirate the ova from the ripe follicles, put them in contact with bull semen, and then transfer to the fallopian tube of the recipient cow.

The fertilized ova were collected through a flank incision made with the front feet 1 ft. lower than the rear ones, and after an intravenous injection of enough chloral hydrate solution to produce drowsiness, and an intracutaneous injection of 50 cc. of a 2 per cent procaine solution around the site of incision. The uterus was grasped without touching either the ovaries or fallopian tubes; a small pointed catheter was forced through the uterine wall and down the lumen to the isthmus. A special washing fluid

was used to carry the ova from the tube into a glass container.

Two alternate procedures are described. One is a ventral incision, under complete, surgical anesthesia and with the animal on its back. The other is a withdrawal of the ova through the cervix.

[Although the application of this procedure in veterinary medical practice may be in the distant future, it presents vast possibilities and affords opportunity for further study by veterinarians interested in the reproductive organs and processes in the cow.—ED.]

EMBRYO TRANSPLANTATION

Embryo transplantation may be valuable to experiment stations and large organizations but may not be economically feasible for the average livestock producer unless, or until, certain limitations can be overcome. This opinion was expressed by W. H. Kyle, U. S. Department of Agriculture, before the American Society of Animal Production in Chicago on Nov. 25-26, 1949.

Repeated recoveries of embryos at regular intervals from donor females in which superovulation has been produced appear to be necessary, he said, to increase materially the progress from selection. Mr. Kyle believes that the reduction in generation interval, which now seems likely, would not compensate for the loss of production from the donor female.

In drawing these conclusions, Mr. Kyle has assumed:

a) Selection within the herd.

b) Interval between generations not changed by embryo transplantation.

c) Death, disease, sterility, and selection at same rate as under natural breeding conditions.

d) Superovulation and recovery of embryos from the donor cow could be performed 12 times per year.

e) Cow replacement rates of 57.7 per cent for dairy herds, as given by Lush.

f) No relationship among offspring under natural breeding.

g) Donor females unrelated to each other.

PROLIFICACY AND GENETIC IMPROVEMENT

The possible increase in the rate of genetic improvement depends on natural reproductive rates in both male and female, Prof. R. E. Comstock, North Carolina State College, Raleigh, told the members of the American Society of Animal Production in Chicago. He concludes that, in its present status, the program of superovulation and ova transplantation faces genetic, as well as technical, problems which must be overcome before it can be used on a mass basis.

Complete Diaphragmatic Rupture in a Bitch

A 2-year-old bitch, part Fox Terrier, weighing about 17 lb., was brought to the hospital on May 22, 1949, about twenty-four hours after being hit by a truck. The right femur was fractured close to the proximal end, and there was a transverse laceration 4 in. long on the lateral surface of the leg,

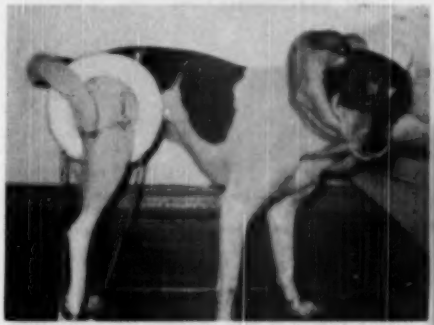

Fig. 1—Transverse laceration on the lateral surface of the leg, extending through the skin but not into the muscular tissue.

extending entirely through the skin but not into the muscular tissue. The exposed area was dry and soiled. A tablespoonful of sand was removed from the pocket formed below the wound by the separation of the skin from the underlying tissues. The pocket extended to well below the knee.

After proper preparation of the area surrounding the wound, treatment consisted of irrigation with sterile saline and debridement. Through open reduction, an intramedullary pin was placed for fixation of the fracture. The muscles were not sutured but were dusted with sterile sulfathiazole powder. The edges of the skin laceration were freshened and the wound closed with interrupted nylon sutures; drainage was established at the lowest point of the wound. The dog was hospitalized for three days, and 300,000 units of penicillin-procaine-aluminum monostearate were given daily in a single injection. The ends of the wound healed by first intention, but the center sloughed and healed by granulation. On the third day, about a cupful of sanguineous fluid was forced out of the skin pocket below the wound through the center of the wound by manipulation. At no time after surgery did the dog seem to be in pain.

After four weeks, June 19, 1949, the intramedullary pin was removed, but apparently there had been little union as crepitation was discernible on palpation. A Thomas splint was affixed, the skin wound now having completely healed. Aside from the bitch making no attempt to use the splinted leg, recovery was apparently progressing satisfactorily.

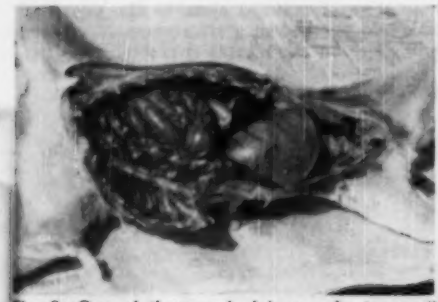

Fig. 2—Opened thorax and abdomen, showing small intestine (left) in chest cavity.

On July 3, 1949, upon examination of the splint, I found it had become too loose and arranged to have the dog brought to the hospital the following morning. But the dog died during the night.

The owner agreed to an autopsy. To my utter surprise, the complete small intestine was found in the thorax, as shown in figure 2. There was a complete linear rupture of the right side of the diaphragm from extreme dorsum to ventrum. The lungs were severely compressed and almost airless. The small intestine in the thorax was partially covered by omentum and adherent, without signs of inflammation, to a number of spots on the pleura. The stomach was filled with undigested table scraps, and both it and the intestine were distended with gas. There was no other visceral lesion.

Examination of the fracture revealed that the soft tissues had almost returned to normal, but that union of the fracture had taken place only on one small point of the approximated surfaces.

Two questions immediately arose. Why had there been no apparent difficulty in respiration during the past six weeks? The owner states positively there was no difficulty in respiration until a few hours before the dog died, and then so slight that he dismissed it as not serious.

Should open reduction of the fracture have been delayed until the wounded, infected external tissues had returned to normal? If so, would the fracture have healed more rapidly?—*Roscoe O. Sealy, Jr., D.V.M., Kansas City, Kan.*

Artificially Induced Abortion

Veterinarians are frequently consulted about the interruption of undesirable gestations but the techniques available to artificially induce abortion have not been standardized. The literature on the subject is scattered, vague, incomplete, and often contradictory. Since it is often of economic importance, the technique for the termination of pregnancy should be standardized. The method preferred may vary in the different stages of pregnancy and the subject warrants a critical analysis and discussion.

Inconvenience, ill health, prophylaxis, and obstructions to parturition (tumors, deformities, the callus of a pelvic fracture) are some of the indications for inducing abortion.

The young of the equine, bovine, or canine species may not develop properly in later life if they become pregnant too young. The children's kitty may have had a merry night "out," a gun dog may have been "caught" just before hunting season, a filly in preliminary training for a stake race may have had a rendezvous with a precocious colt. These are examples of actual incidents for which the interruption of gestation has been requested. Moreover, for those who believe in telegony, undesired fecundation by a low-grade male is a constant worry.

METHODS AND EQUIPMENT

Abortion may be induced by *medicinal* and *surgical* means. The former would include hormonal agents that would disarrange the endocrine balance. The latter are interventions applied directly to the gravid uterus or to the ovaries.

Drugs that are classified as abortifacients are rue *(Ruta graveolens)*, yew *(Taxus baccata)*, savin *(Juniperus sabina)*, the fungi *(Ustilago maudis* and *Secale cornutum)* (ergot of rye), posterior pituitary extract, and sulfate of quinine. None of these is reliable, even in toxic doses, and can be ruled out in that role for general clinical use. At times, they fulminate contractions of the uterus and expel the contents but they generally expend their effect in vain. They are less dependable than hormone-deranging estrogens such as stilbestrol.

In the category of *surgery* are: (1) enucleation of the corpus luteum; (2) massage of the gravid uterus; and (3) dilation of the cervical canal.

The first, the expressing of the corpus luteum, suppresses the luteal secretion which is necessary to the continuation of gestation. Its usefulness is limited to the

bovine species and then, only as long as the ovary is within reach of the arm.

In small animals, it would require laparotomy, and in the horse the corpus luteum, being deeply imbedded, cannot be safely enucleated by pressure without risk of inflicting serious damage to the rectum; and besides, the corpus luteum of mares is not absolutely indispensable during all stages of gestation. Thus, this convenient method of inducing abortion is practical only in the bovine species and only while the ovary can be readily palpated.

The second, or massage of the uterus, stimulates contractions that detach the fetal envelopes and subsequently expel the uterine contents—usually in a few hours. The massage consists of a succession of firm squeezings with the hands. Needless to add that it is practical only in the larger animals (heifers, cows, fillies, mares) and is not generally practiced.

The third, or dilation of the cervical canal, has to be done before the os uteri is beyond the reach of instruments. Catheterizing the cervical canal is feasible in mares, cows, and bitches during the early stage of gestation.

There are, therefore, three surgical and a hormonal method (e.g., stilbestrol) that may be regarded practical and effective in interrupting gestation in the different species.

The following is quoted from a review of the subject and the personal experiences of the authors.*

The Bitch.—The dog was the first species in which the effects of estrogens on gestation were studied. The results showed that estrogenic agents interrupted gestation during the eighteen days between fecundation and nidation. The dose required to cause abortion in dams of medium size was 90,000 I. U. of benzoate of estradiol or 10 to 15 mg. of stilbestrol. Whether large doses will interrupt gestation after nidation is undecided.

Three, 30,000 I. U. doses or 3 to 5 mg. of stilbestrol at two-day intervals, given at the end of estrus, interrupted gestation and started a new heat period with tumefaction of the vulva, a mucous vaginal discharge, and the mating of such bitches did not result in conception—and accomplished the purpose desired.

Cats.—The same treatment is applicable to cats except that the injections must be made before the thirteenth day after mating.

Ewes.—Stilbestrol in 2.7-mg. doses will interrupt gestation in ewes during the first month. Results to be expected at a more advanced stage are lacking.

Mares.—Since the enucleation of the corpus luteum is neither a reliable nor safe method of interrupting gestation in mares, and even though the value of hormones in that role is not fully determined, they should be tried before resorting to *dilation of the cervical canal.* Isolated reports that benzoate of estradiol will cause abortion in mares up to six months of gestation remain to be confirmed by further trials. The injection of 40 mg. of stilbestrol intramuscularly, repeated in forty-eight hours, and again in three or four days if necessary, should be tried before resorting to the more radical procedures.

Technique of Cervical Dilation.—Dilating the sealed cervix with a sound or catheter will cause expulsion of the uterine contents in any species. The objective is to cause contractions of the posterior part of the uterus rather than to puncture the chorion, although escape of the fetal fluid makes expulsion certain. A vaginal speculum that stretches the fundus of the vagina and a sound, the diameter of which corresponds to the size of the subject, are the necessary instruments. Antiseptic irrigation of the vagina, cleansing the pudendum, and the use of sterilized instruments are worthy precautionary measures.

Mares should be prepared for the operation by a day of dieting, evacuating the rectum, perivulvar cleansing, irrigating the vagina with sodium bicarbonate solution, and restraining in stocks or narrow passage with breeding hobbles to protect the operator. Instruments should include a reliable speculum, sterilized sound (50 cm. long and 8 to 10 mm. in diameter), and a light that will give a clear view of the os uteri. Epidural anesthesia is desirable though not imperative. Surgical cleanliness and a clear unobstructed view, however, are essential, because an open, gravid uterus in mares is vulnerable to infection, especially to the mass contamination of unclean surgery.

With the proper preparation, the technique of interrupting gestation in mares is simply that of penetrating the cervix and entering the uterus with the sound to a depth of 10 or 12 cm., moving it about gently to different places with the object of exciting contractions which generally empty the uterus in two hours or so.

A complication may arise from the difficulty met in penetration of a firmly organized seal of the os uteri. It may have to be broken down manually if the dull, rounded end of the sound fails to perforate easily. Harsh poking should be avoided.

*Berthelon and Tournut: *Interruption artificielle de la Gestation. Rev. Méd. Vét.*, Nov., 1948.

Permanently Implanted Intramedullary Pin in a Dog

A 3-year-old, 35-lb., white, male mongrel dog was presented with the history of having been struck by an automobile a few minutes before. Inability to bear weight on the left hind leg was shown on palpation to be due to a comminuted fracture of the midshaft of the femur.

Not having had complete satisfaction in treating fractures of the femur, especially in male dogs, with the Thomas splint or any

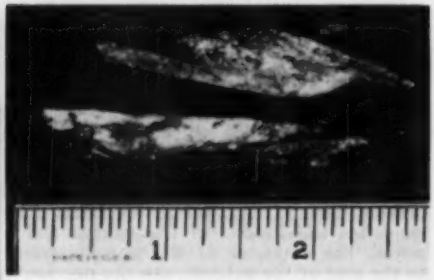

Fig. 1—Bone fragments removed at time of pinning.

of its modifications, and considering the complexity of the fracture, it was decided to try intramedullary pinning for the first time.

Necessary instruments and supplies were prepared, including a drill-point Steinmann pin of suitable length and diameter. The patient was given morphine and a large area over the leg and hip clipped. Anesthesia was produced with pentobarbital sodium, the leg shaved, cleaned, and disinfected, and then draped with wet, disinfected drapes.

A liberal incision was made through the skin and fascia lata, directly over the fracture and parallel to the femur, and the fracture site exposed by separation of the biceps femoris and vastus lateralis muscles. Lying almost unattached in the hematoma were two spirally broken fragments of bone measuring about 2¼ in. in length and shaped as shown in figure 1. These bone fragments were removed, and the fracture site cleansed of blood clots. A skin opening was made over the trochanteric fossa and the drill-point Steinmann pin started into the medullary canal with a hand chuck. Pinning was completed in the usual manner. In the reconstructed shaft, there was only about one sixth of the normal amount of bone substance in apposition. Because of the great loss of bone substance, the pin should have been permanently implanted, but no instrument was available with which to cut the pin. As it was Sunday and no stores were open, it was decided to cut and implant the pin at a later date. After dusting the involved tissues with sterile sulfathiazole powder, the muscular wound was closed with plain catgut and the skin with nylon suture. The dog was hospitalized for three days and single daily injections made of penicillin in oil and wax. The third day, he was beginning to bear weight on the affected leg. After eight days, the skin sutures were removed.

Three weeks after the occurrence of the injury, the usual preoperative preparations were made for cutting off and permanently implanting the pin. It was withdrawn about an inch and a Berbecker pin cutter applied to cut off the excess pin. When pressure was applied to the handles of the pin cutter, one jaw of the instrument suddenly

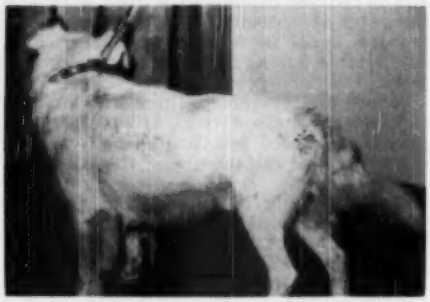

Fig. 2—Patient a few days after pin was permanently implanted.

broke off through the joint. Quickly, another pin of proper length and diameter was selected from our stock and wiped clean with an alcoholic antiseptic solution. The leg was held firmly so that the fracture would not be misaligned in event the callous was not rigid, and the original pin was withdrawn and replaced by the new pin of proper length. Penicillin therapy was administered as in the first operation. Healing was rapid, and use of the leg was only very slightly retarded.

An x-ray was made when the pin had been in place more than ten months, and for at least seven months the dog had had complete use of the leg. According to the owner, sometimes in cold, wet weather a barely perceptible limp was noticed.—*Roscoe O. Sealy, Jr, D.V.M., Kansas City, Kan.*

Rectovaginal Fistula Operation in the Mare

A rectovaginal fistula in a mare is readily diagnosed by the evacuation of feces from the vagina. Vaginal examination with a speculum reveals a fistulous defect on the dorsal wall, with the border between the rectum and the vagina readily distinguished by the darker color of the rectum and the pale pink color of the vagina.

Such a defect may result from: (1) direct trauma to the vaginal wall during labor; (2) delayed sloughing of vaginal tissue, due to bruising and interference with the blood supply during labor; and (3) imperfect healing of a perineal laceration repair involving the rectal wall and the sphincter ani.

This paper deals only with the surgical repair of a rectovaginal fistula not involving the perineum or the sphincter ani. Such a laceration, if not repaired within several hours following delivery, should not be repaired until edema has subsided, scar tissue has formed between the torn edges, and involution has taken place. This generally requires at least three months.

PREOPERATIVE CARE

When the rectovaginal fistula is of several months' duration, the following preoperative course is recommended: Beginning three days prior to operation, administer 1 gal. of mineral oil for complete catharsis. Feedings should be restricted to 1 qt. of grain twice daily, all food being withheld during the last thirty-six hours, allowing the mare to have water only.

The number of colon bacilli is greatly reduced and healing is promoted by the administration of 1 oz. of sulfathalidine every twelve hours for a week before and after operation.

OPERATIVE TECHNIQUE

During the intravenous injection of 7.5 per cent chloral hydrate solution for anesthesia, the mare should be restrained with sideline hobbles, and then placed on her back on the ground, braced between two bales of hay, the operative area cleaned, and then draped.

After securing the lips of the vulva with large retractors, an incision is made around the edges of the fistula. The vaginal wall is dissected from the rectal wall, care being taken to leave the rectal wall amply thick for inversion. The dissection should continue far enough to permit mobilization of the bowel.

When the edges of the rectum, at the site of the fistula, can be neatly approximated, the first closure is started perpendicular to the long axis of the bowel with a series of mattress sutures of No. 0 chromic catgut, using a needle with a noncutting edge. The bites of these mattress sutures are taken parallel to the edge of the fistula, care being exercised not to enter the lumen of the bowel.

A second and third row of interrupted No. 0 Lembert chromic catgut sutures are placed over the first closure for reinforcement. These sutures do not enter the lumen of the bowel, but are placed in the wall of the rectum. All edges should be inverted or approximated gently and snugly, but not tightly enough to strangulate the tissues.

When the third row of rectal sutures has been placed, the edge of the vaginal wall surrounding the fistula should be trimmed off and a continuous suture, knotted at both ends, of stainless steel wire used to close the vaginal wall. The vaginal closure should be made perpendicular to the rectal closure, and parallel to the long axis of the vagina. Bits of adjacent rectal tissue should be included in each bite in order to close all dead space. Sharp dissection, careful handling of tissues, and elimination of dead spaces should be particularly emphasized along with the other essentials of aseptic technique for the success of this operation.

Following the vaginal closure, the sphincter ani muscle is severed in order to permit free passage of gas and feces. A scalpel is inserted, cutting edge up, along the inner border of the anus. Guiding the upward cutting by palpation, the eventual severing of the sphincter ani muscle will be noticed by the flaccidity of the anal puckering.—*John D. Gadd, V.M.D., Towson, Md.*

In dealing with translucent foreign bodies lodged in the respiratory tract, the diagnostic roentgenograms should be overpenetrated and the correct position determined by fluoroscopic examination.—*Acta Radiol., 1948, abstr. in Am. Rev. Tuberc., April, 1949.*

Seasonal variations in fertility are great. Mature cows are low in fertility late in the winter but high in summer, while heifers reverse this tendency. Similarly, old bulls are least efficient in February, when young bulls are most potent.—*G. W. Salisbury, Ph. D., Illinois.*

Presented before the Section on Surgery and Obstetrics, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

I am indebted to Dr. James Farquharson, Fort Collins, Colo., for first demonstrating to me the practicability of this procedure on the mare.

Vibrio Foetus Infection in Virginia

WILSON B. BELL, B.S., M.S., D.V.M.

Blacksburg, Virginia

THE PRESENCE of *Vibrio foetus* infection in cattle has been reported from a number of states, and considerable work has been done on this disease in recent years.[1,6-10] It is likely that this infection is quite widespread and that the establishment of additional brucellosis-free herds will uncover more vibrionic abortion. Evidence of *V. foetus* infection in cattle in Virginia, based on tests, was reported by Plastridge and Williams.[6] The attention of the writer was directed to vibrionic abortion in cattle when a large, brucellosis-free dairy herd continued to have a high annual abortion rate. The isolation of *V. foetus* from this herd definitely established the presence of this organism in Virginia.

HERD HISTORY

The dairy herd (herd A), from which the organism was isolated, consisted of three breeds. The majority of the trouble occurred in the Holstein-Friesian group, although the breeds were handled more or less as one herd, in that strict separation was not practiced. This herd had been free from brucellosis for sixteen years at the time the isolation of *V. foetus* was made. Repeated tests and examinations for *Brucella abortus*, *Trichomonas foetus*, and other pathogenic microörganisms were negative. The greatest number of abortions occurred in 1945 when approximately 5 per cent of the animals bred aborted. The incidence in the Holstein-Friesian group was considerably higher. In 1947 and 1948, the number of abortions approached the 1945 level.

The abortions occurred from the third to the sixth month and, in most cases, an abortion was followed by a normal gestation. Rarely did a cow abort a second time or suffer any serious interference with breeding ability.

Serologic tests, made in 1948, indicated that *V. foetus* infection was present in the herd.

BACTERIOLOGIC

The organism was isolated from the stomach contents of twin fetuses aborted at three months and recovered in the intact membranes. Smears made directly from the fetal fluids and the stomach contents revealed gram-negative, comma-shaped rods and spiral filaments that agreed with the description of *V. foetus*.[5] Isolation of the organism was successful only from the stomach contents of the fetuses. The stomach contents were inoculated into tubes of heart infusion, containing 0.3 per cent agar, and streaked on blood agar plates. Growth in pure culture was obtained after three days' incubation at 37.5 C. in an atmosphere containing 10 per cent carbon dioxide. Subcultures were established in the soft agar medium from the original tubes but could not be established on agar plates containing ox blood. The organism was agglutinated by a known positive serum.

The blood serum of the aborting cow gave an incomplete reaction in a 1:800 dilution ten days after the abortion. The cow was bred successfully during the second heat period following the abortion.

OBSERVATIONS IN OTHER HERDS

After the definite establishment of the infection in herd A, studies were made of other herds in which breeding troubles, including abortions, were present. Evidence, in the form of positive serologic tests and the clinical manifestations of the infection, indicates that *V. foetus* occurs in several widely separated herds. All the herds were brucellosis-free and gave negative tests, except herd F. Adult vaccination with *Br. abortus* strain 19 was practiced in herd F, and several reactors were present. There were no clinical manifestations of brucellosis in this herd, however. The tests are

TABLE 1—Agglutination Tests for Vibrio Foetus*

Herd	Tested	Positive	Suspicious	Negative
A	5	3	0	2
B	5	1	2	2
C	4	0	1	3
D	3	2	1	0
E	4	1	1	2
F	4	3	0	1
G	16	2	3	11
Totals 7	41	12	8	21

*Tests conducted by Dr. W. N. Plastridge, Storrs Agricultural Experiment Station, Storrs, Conn.

Professor of veterinary medicine, Department of Biology, Virginia Polytechnic Institute, and research professor, Virginia Agricultural Experiment Station, Blacksburg.

summarized in table 1, and the histories are as follows:

Herd B.—This herd, of grade Guernseys, was troubled with cows returning to estrus in two to four months after breeding. Service was by artificial insemination, and different bulls were being used. No abortions were observed, nor was there evidence of infection at the time of examination.

Herd C.—This was a Holstein-Friesian herd, with high production records, in which trouble first appeared in the form of a few nonbreeders. Breeding was done naturally by the herd sires. There was evidence of vaginal inflammation, at the time of examination, in a few of the animals. Abortions at four to six months had occurred. Examination of the bulls was negative.

Herd D.—Considerable trouble in the form of abortions and a poor conception rate had been experienced by this purebred Guernsey herd for several years. Abortions occurred up to the sixth or seventh month, and 1 or 2 mummified fetuses had been removed.

Herd E.—This grade Hereford herd had five abortions in ten days. The abortions occurred in the seventh to the eighth month of the gestation period, and the clinical manifestations resembled brucellosis. Two tests for brucellosis were negative, and the 1 fetus that was available did not yield either *Br. abortus* or *V. foetus*.

Herd F.—This purebred Jersey herd had several cows that returned to heat in two to three months, and in two instances small fetuses, aborted at sixty to ninety days, were found.

Herd G.—This was an Aberdeen-Angus herd that had several abortions and a poor conception rate.

SUMMARY

Vibrio foetus was demonstrated in the fetal fluids and stomach contents, and isolated from the stomach contents, of twin fetuses that were aborted at three months. As far as the writer can determine, this is the first instance in which this organism has been isolated from cattle in Virginia. Since the herd from which it was isolated was brucellosis-free, and repeated examinations for *Trichomonas foetus* and other pathogenic microörganisms were negative, it is believed that the *V. foetus* contributed a major part to the abortion rate. The manifestations of this disease appeared to be similar to those described by the workers cited.

Herd histories, clinical manifestations, and serologic tests indicate that the infection is present in other herds, both beef and dairy.* It is not assumed that all the trouble experienced by any of the herds was due solely to *V. foetus*, but the isolation of the organism from one herd and positive serologic tests, with clinical manifestations, in others indicate that this organism is a contributing factor.

References

[1] Barger, E. H.: Abortion Induced by Vibrio fetus. J.A.V.M.A., *92*, (1927): 468-474.

[2] Bergey, D. H., *et al.*: Bergey's Manual of Determinative Bacteriology. 5th ed. The Williams and Wilkins Co., Baltimore, Md., 1939.

[3] Gilman, H. L.: Some Causes of Abortion in Cattle Free From Bang's Disease. Cornell Vet., *29*, (1939): 153-165.

[4] Plastridge, W. N., and Williams, L. F.: Observations on Vibrio Foetus Infection in Cattle. J.A.V.M.A., *102*, (1943): 89-95.

[5] Plastridge, W. N., Williams, L. F., and Petrie, D.: Vibrionic Abortion in Cattle. Am. J. Vet. Res., *8*, (1947): 178-183.

[6] Plastridge, W. N., and Williams, L. F.: Vibrionic Abortion in Cattle: Second Report. Cornell Vet., *38*, (1948): 165-181.

[7] Rhoades, H. E., and Hardenbrook, H., Jr.: The Occurrence of Vibrionic Abortion in an Illinois Dairy Herd. Cornell Vet., *37*, (1947): 8-13.

[8] Smith, T.: Spirilla Associated with Disease of the Fetal Membranes in Cattle (Infectious Abortion). J. Exptl. Med., *28*, (1918): 701-719.

[9] Smith, T.: The Etiological Relation of Spirilla (*Vibrio fetus*) to Bovine Abortion. J. Exptl. Med., *30*, (1919): 313-323.

[10] Traum, J.: Bovine Infectious Abortion and Associated Diseases of Cattle and New-Born Calves. II. The importance of *Bacterium Abortum* of Bang and other Microörganisms in Bovine Infectious Abortion. California Agric. Exptl. Sta. Bull., *333*, (1923): 294-325.

The writer is grateful to Dr. W. N. Plastridge, Storrs Agricultural Experiment Station, Storrs, Conn., in whose laboratory the serologic examinations were made.

*Since the preparation of this article, the *V. foetus* organism has been demonstrated in two additional herds.

Brucella Abortus in Goats

Veterinarians in India found *Brucella abortus* in milk samples from goats on a farm where there were considerable losses from abortion in goats and occasional losses from abortion in cattle. Due to separation of cattle and goats on this farm, interherd transmission seemed unlikely. The investigators theorized that the goats had picked up the organism in an adjoining district where they were purchased.—*Indian J. Vet. Sci. and Anim. Husb., June*, 1948.

Gelfoam, tightly compressed around a penicillin bougie, makes an excellent seton for wounds involving the end of the teat.—*D. E. Trump, D.V.M., Minnesota.*

Simplified Heart Puncture in Poultry Diagnosis

F. X. MacARTHUR, D.V.M.

Boise, Idaho

BLOOD is one of the principal tissues of a bird's body. It may make up as much as 8 per cent of the body weight. In a number of ailments, particularly acute bacterial diseases, the blood is involved.

In most poultry diagnostic laboratories, blood cultures and determinations are avoided because of difficulties in obtaining proper and adequate amounts. Each of several methods occasionally used has definite limitations. One is the crude process of decapitation, which also collects ingesta from the crop, fluid from the lungs, and bacterial contamination. Others have taken the skin from the neck region, severed the jugular vein and carotid artery, and caught the blood in a vial. In this procedure, the blood clots before a sufficient quantity can be collected. There is also bacterial contamination and the difficulty of obtaining a neat tube and blood getting on the operator. In another method, blood is drawn from a wing vein, but this often results in an insufficient quantity. Possibility of contamination is again great, and the operation is unsightly.

A number of investigators prefer bleeding from the heart. By the method most commonly used, the bird is placed on its side, a needle is thrust between the second and third ribs, and blood is drawn directly from the heart. This procedure is not satisfactory at times, because of the flat processes (processus uncinati) on the posterior border of the second to sixth ribs. These processes may overlap making it impossible to thrust between the ribs. Other objections to this method are: (1) the danger of lung puncture; (2) difficulty in obtaining sterile samples; and (3) accuracy required in locating the heart.

From the Idaho Animal Disease Laboratory, Department of Agriculture, Boise.

SIMPLIFIED PROCEDURE

In an attempt to overcome these difficulties, the following procedure has been developed:

The bird is placed on its back, and an attendant holds the legs in one hand and

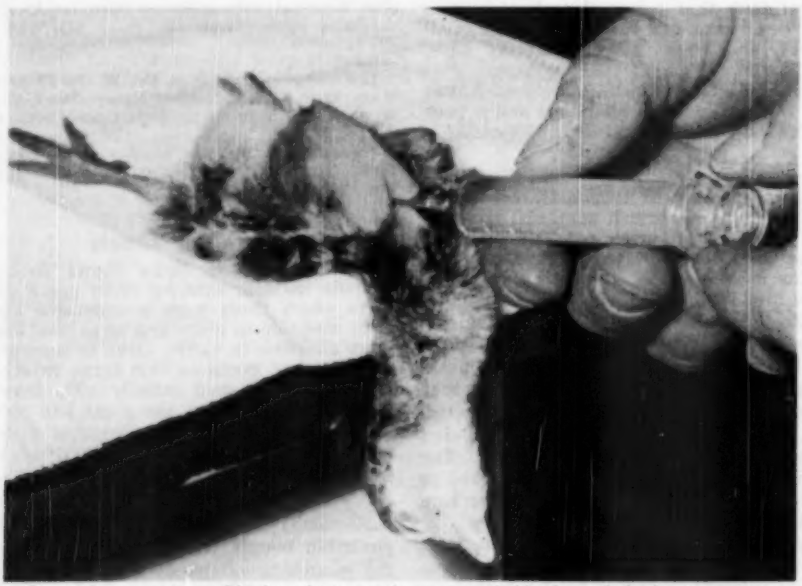

Fig. 1—Proper position of bird to obtain an adequate, sterile blood sample by heart puncture.

stretches the neck forward over the table edge (figure 1). A 20- or 22-gauge, 1-in. needle is used by the operator on small birds. For larger birds, a 1½- or 2-in. needle is required. The operator thrusts the needle through the dorsal opening of the clavicle (wishbone), and as soon as the needle penetrates the pleural cavity, a little tension is maintained on the syringe. The line of direction for the needle is posterior and a little downward, but not so much as to hit the base of the heart, and directly in line with the crest of the sternum. The heart is suspended medially in the pleural cavity. By following the sternal crest, the needle will penetrate the heart and blood will rush into the syringe. At least 2 cc. of blood may be obtained from a 3-day-old chick. Proportionately more may be taken from older birds.

DISCUSSION

Birds can be bled by this method with very little danger of death, if it is desired to keep them alive. With the importance now placed on detection of Newcastle disease (avian pneumoencephalitis), this method of getting sufficient, uncontaminated blood without difficulty should be a step toward its control. The Pathological Laboratory of the BAI, Washington, D. C., requests 2 cc. of serum for virus-inhibiting tests. In older methods, much difficulty was experienced in getting adequate, satisfactory samples.

In most bacterial diseases, the causative organism can be found in the blood stream. Therefore, frequently a dozen or so live chicks are submitted to the laboratory for bacterial examination. Some are diseased, others are normal. To obtain bacterial cultures of viscera on all birds is a tedious, prolonged, and expensive process. A postmortem examination can be performed on 2 or 3 birds, and various organs cultured. From the remaining birds, a composite blood sample can be inoculated into broth medium having 10 to 20 parts of medium for each part of blood.

In this puncture method, the skin in the region of the sternum is torn and drawn anteriorly up on the neck region. The puncture can be made sterile through underlying muscle to the heart. On normal birds, blood so drawn will be sterile on culture.

Serologically, tube serum agglutination tests are considered more accurate. By the method under consideration, birds can be bled faster than by the wing procedure, and with sufficient quantity to set up the tube test.

Blood chemistry and hematology are not used in poultry diagnosis, chiefly because of difficulties in obtaining adequate samples of blood. By this puncture procedure, these requirements can be filled.

SUMMARY

1) Older methods of securing blood samples from poultry, especially young birds, have resulted in contaminated, inadequate, and unreliable samples.

2) By bleeding through the dorsal opening of the clavicle, and going down the posterior line with the crest of the sternum, the heart can readily be reached and an adequate, sterile sample can be obtained.

Anestrus and Hormones

The causes of anestrus are still obscure, says C. F. B. Hofmeyr (*J. South African V.M.A., 19*, Dec., 1948: 144-145), but nutrition and bad management probably play a role. Whenever they do, these factors must be corrected before resorting to hormones. And above all, hormones must never be used in the presence of infection, either acute or chronic.

On the average, cows milked prepartum reached their peak of production slightly later, and maintained their production at near peak levels over a longer time than did control cows.—*West Virginia ADA, June* 21-23.

Some anestrous cows show genitalia of normal size, but the ovaries are smooth. The uterus becomes turgid when massaged. Such cows frequently come into estrus shortly after examination, apparently as a result of the mechanical stimulation.—*J. South Afric. Vet. M. A., Dec.* 1948.

Conception Rate.—The conception rate of 199,457 cows, artificially inseminated in Great Britain, was 63.7 per cent. The rate by quarterly periods was 64.3 per cent for January-March, 62.9 per cent for April-June, 64.5 per cent for July-September, and 63.4 per cent for October-December.—*From The Veterinary Record, August* 6, 1949.

Mortality in Newborn Foals.—According to Swedish observers, avitaminosis A is more often responsible for mortality in newborn foals than mineral deficiency or the infections generally incriminated. The latter, as a rule, are secondary to the main cause, and the former (minerals) are transferred to the fetus from the dam's skeleton. On the other hand, vitamin A deficient forage is not compensated.—*Excerpt in Rev. Méd. Vét. from Veterinarhagskolan, May, 1949.*

CLINICAL DATA

Clinical Notes

Mastitis in sows can be treated to good advantage by applying hot and cold packs, alternately, and by intramuscular injection of pituitary extract.—*L. M. Hutchings, D.V.M., Indiana.*

Urea will be tolerated by most cows at a rate of 1 oz. at a time, and repeated at intervals of not less than four hours. Larger or more frequent doses are likely to result in death from the ammonia formed in the rumen and absorbed into the blood.—*R. P. Link, D.V.M., Illinois.*

Keratitis in calves is one of the sequels of phenothiazine medication. Protection against sunlight for twenty-four hours after administration prevents the occurrence.—*Anim. Res. Sta., New Zealand. From Biol. Abstr., Sec. F, December, 1948.*

Tularemia.—The known source of tularemia is no longer confined to wild rabbits. Squirrels, rats, field mice, skunks, beavers, fleas and ticks, and water contaminated by these types of wildlife, have been found responsible for human cases. Strangely, domestic animals are exempt; even the domestic rabbit doesn't contract "rabbit fever."

The Diagnostic Laboratory.—The modern practitioner has been taught to have such abiding faith in the findings of the laboratory that guesswork and half-knowledge on the part of the laboratorian is apt to complicate clinical work. Belk and Sunderman (quoted in *British Medical Journal*) sent three specimens to 59 laboratories in Pennsylvania; some were graded "gross errors," some "unsatisfactory," and others "satisfactory." The percentages of the three scorings varied with the different specimens and laboratories. A questionnaire circulated among pathologists for an explanation of the discrepancies expressed the belief that poorly trained technicians were mostly responsible for them. Other reasons given were overwork due to inadequate personnel and poor equipment.

Inguinal hernia in adult bulls is likely to be a congenital condition, and corrective surgery should be discouraged in order to avoid a crop of herniated bull calves.—*A. G. Danks, D.V.M., Pennsylvania.*

Radioactive Mosquitoes.—The Army Chemical Center in Maryland is raising mosquitoes in beakers of water containing radioactive phosphorus. This is said to be a convenient means of producing marked insects for studies of dispersal and predation. —*Science, July 29, 1949.*

When hog cholera is suspected, but not definitely diagnosed, give each pig a liberal dose of antiserum. Wait three to six days and, if conditions have improved, give virus to each pig.—*H. C. Smith, D.V.M., Iowa.*

Penicillin in Caprine Mastitis.—Penicillin is a highly effective treatment for chronic streptococcic mastitis in goats. The dose is 25,000 units per half of the udder and may be administered in aqueous solution, water-in-oil emulsion, ointment, or bougie. Of 25 cases studied, 19 recovered after one treatment, while 5 others required as many as four treatments at weekly intervals. One case failed to respond to repeated doses.—*Dr. C. S. Bryan, Michigan State College.*

Brucella M vaccine has been used on more than 5,000 cattle in more than 400 herds in Michigan. When used in clean herds that had been recently reinfected, abortions practically ceased within a few weeks, and spread in the herd was reduced by 50 per cent (as compared with nonvaccinated herds).—*B. J. Killham, D.V.M., Michigan.*

During the two years that Brucella M vaccine has been available to Michigan veterinarians, the results have been so favorable that now five doses of M vaccine are used in the state to each three doses of strain 19, even though the latter is available without cost and veterinarians must purchase the former.—*C. F. Clark, D.V.M., Michigan.*

Acute Swine Erysipelas in Northwestern Iowa

W. A. AITKEN, D.V.M.

Merrill, Iowa

IT HAS been said that an honest confession is good for the soul; therefore, may I hasten to confess that there is much that I do not know about the disease which I have undertaken to discuss. That is not saying that eighteen years on the firing line, battling swine erysipelas, has not afforded ample opportunities for observing and cogitating over its pecularities and variabilities. However, the greater the number of cases observed, the greater the variations detected and the less certain one may be that he knows even a few of the answers.

Why then did I choose to discuss acute swine erysipelas? Because it may be that others are as puzzled regarding it as I, and, if so, a frank discussion may benefit us all.

When I was a college freshman, the first instruction which impressed me was that of the anatomy professor, who advised each of us to "be a doubting Thomas—believe nothing until you have proved it in the laboratory." This is truly a tough policy, but, if followed, it should facilitate progress.

Applied to my experience with swine erysipelas, it means that I can now look back on it somewhat as an unfinished, eighteen-year research project conducted in my own way in a private practice. My purpose here is merely to give you a progress report on that interesting and challenging experience.

WHAT WE KNOW ABOUT SWINE ERYSIPELAS

Swine Erysipelas was first recognized as a serious disease entity in the western cornbelt nearly twenty years ago. However, there seems little doubt that it was present many years earlier. It probably had been diagnosed previously as cholera, or as the late, unlamented hemorrhagic septicemia. Such diagnoses may seldom have been seriously questioned because the use of the specific serums or vaccines for those diseases probably seemed to control the disease, as well as to effect some surprising recoveries. (From reports, it seems probable that some persons may still be diagnosing and treating it as cholera.)

Since its identification in 1931, we have become increasingly aware of the damage erysipelas has inflicted on the swine industry. A major share of the credit for this knowledge should go to the various diagnostic laboratories of the area, because of the tireless support they have consistently given the often puzzled practitioners. The disease is so unpredictable that, had I not been located near one of these efficient laboratories and had most of my field diagnoses confirmed by them, I would not dare to attempt this discussion.

Men often form different opinions after observing phenomena that are consistently similar, so it is only natural that widely different opinions are held by those who deal with a disease as inconsistent as swine erysipelas. Therefore, I will first cite briefly a few opinions regarding this disease which seem to be generally accepted:

1) It often resembles cholera, and in recent years has been much more prevalent, but it is definitely less destructive and much less to be feared.

2) The prime factor causing the disease seems to be the swine-erysipelas bacillus, *Erysipelothrix rhusiopathiae*.

3) This germ may survive for long periods in the soil, even multiplying vigorously, as if on a culture, when in favorable (*i.e.*, warm, slightly alkaline) soils, but it soon dies when in an acid soil.

4) It is an infectious, seemingly transmissible disease, yet it apparently is not contagious.

5) It may affect only one or a few individuals, or it may affect the majority or even the entire herd.

6) Swine of any age may be affected.

7) The disease may assume any form from peracute to chronic, and individual herds may be affected solely by one type or by all types.

8) The mortality is variable, being rare in chronic cases but increasing with the acuteness of the infection.

9) The survivors of the more acute types frequently develop chronic lesions, such as arthritis, and occasionally skin sloughs or valvular endocarditis, and the thriftiness of these chronic cases varies greatly. In many animals, the snout gets longer and the joints get larger, but the pig seems to shrink.

10) Finally, it is the most unpredictable common disease affecting the so-called large animals of the cornbelt.

The extreme unpredictability of swine erysipelas may be illustrated by a few briefed observations of typical developments in untreated herds:

a) The vast majority of farms in our territory have had one or more typical, chronic,

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erysipelas arthritic cases in recent years, so the erysipelas bacillus must be widely distributed; yet many of these farms have never shown other evidence of being infected.

b) Occasionally, a considerable percentage of a herd has developed arthritis; yet the more acute forms of erysipelas have been absent, and often not even the chronic form has developed on the same premises in subsequent years.

c) In several instances, one or more animals have died suddenly with proved erysipelas, but no other evidence of the disease has appeared on the premises since.

d) On several occasions, sows have died with acute erysipelas; yet their suckling pigs, sometimes only a few days old and untreated, failed to develop visible symptoms of the disease.

e) On the other hand, up to 30 per cent of a herd has occasionally developed acute erysipelas in a few hours with a very high mortality. (Such herds, when contacted, have always been treated, so we cannot tell what would have happened had nature been allowed to run its course.)

f) Some farms have suffered heavy mortality one year, yet nonimmunized pigs, raised on the same premises in following years, have remained healthy.

Swine-Erysipelas Antiserum

Because of these, and many other, variations in the natural course of the disease, it obviously is difficult to evaluate accurately the benefit from vaccination or other attempts at controlling or treating swine erysipelas.

Is it then surprising that, prior to the arrival of specific biological products, other nonspecific vaccines or antiserums often were credited with definite benefit? Perhaps the disease had already run its course, and the outcome would have been the same had no treatment been given; or perhaps the injection of the foreign substances, in some way, temporarily stimulated the resistance of the individual. If so, it could be that the greater the dose, the greater the benefit. If this were true, then hog-cholera antiserum, because of the large quantity necessary for effect, should have been the most beneficial treatment.

Shortly after the disease was recognized as a major problem, the specific swine-erysipelas antiserum became available. This proved effective as a curative agent, seemingly increasing the percentage, as well as the speed, of the recoveries and, logically, the quicker the recovery, the fewer should be the chronic lesions which develop as sequelae.

Thus, with regard to curative agents, it seems that while many individuals recover spontaneously from the more acute forms of erysipelas, more recover when hog-cholera antiserum or other nonspecific biological products are given, and still more when the specific erysipelas antiserum is used. However, even though we could be satisfied with thus reducing the death loss, the percentage of recovered individuals which develop into stunted, chronic cases is still a source of dissatisfaction to the veterinarian and of considerable financial loss to the owner.

Prophylactically, the picture is probably similar, but the results are less evident. Some untreated individuals seem to have considerable resistance. However, vaccination with hog-cholera antiserum, with or without virus, definitely seems to produce an increased resistance, and the use of erysipelas antiserum is supposed to produce an even greater temporary immunity. At best, this is only a passive immunity and seems to last but a few weeks. However, exposure during these few weeks could, and probably does, create an active immunity in many individuals.

In an attempt to secure such an active immunity consistently, a living vaccine, known as erysipelas culture, was made available several years ago. The simultaneous use of this culture with erysipelas antiserum presumably produces an active immunity which is supposed to last several months.

Unfortunately, there is no accurate means of testing such an immunity. In many infectious diseases, an immunity can be challenged by feeding or injecting the living etiologic agent, but such is not possible in swine erysipelas, because even supposedly susceptible individuals thus exposed seldom show detectable effects. Therefore, it seems that only long and careful observation of the disease under field conditions can give a clue to the degree or tenure of the presumed immunity. We hope someone soon will undertake to compile such data from a large number of qualified observers. However, this report has time to include only my own observations regardless of how erroneous or nontypical they may be.

That the disease will not present the same picture in different territories is to be expected, since the swine-erysipelas bacillus is sensitive to soil conditions, and such soil conditions vary greatly in different territories. Furthermore, if the disease varies with the territory, then the methods used and the results obtained in attempting its control probably also will vary. It is possible that what is successful one place may fail in another.

HOG-CHOLERA ANTISERUM

In my practice, cholera antiserum always has, and still does, play a major role in the control of acute swine erysipelas, much to the dismay of a few of my colleagues. Years ago, it was often accidental—either I was in doubt or had tentatively diagnosed the disease as cholera. When it became evident, a few days later, either by the recovery of sick animals or from laboratory diagnosis, that the disease actually had been erysipelas, it was always by then under control and, except for the development of many chronic cases, the method of treatment had proved to be satisfactory. Therefore, when my diagnosis is acute erysipelas, if the owner intends eventually to immunize the herd for cholera, and if all the pigs are over a month old, I usually advise that they be vaccinated with cholera antiserum and virus and that the sick ones be given erysipelas antiserum also. In herds where the infection seems more active, some erysipelas antiserum is added to the cholera antiserum for all the pigs. Any cholera-immune individuals in such herds are, of course, vaccinated for erysipelas only.

My reasons for continuing to use cholera antiserum and virus on such herds are:

1) Cholera might be present, although not evident, and I have a much more fearful respect for cholera than I have for erysipelas.

2) Twice, I have had cholera appear in herds five and seven days, respectively, after I had vaccinated them for erysipelas. (The fact that, despite careful precautions, I may have introduced the cholera virus into those herds still haunts me.)

3) I believe we can kill two birds with one stone by checking erysipelas temporarily while creating a lifetime immunity against cholera.

4) Since the immunity resulting from erysipelas vaccination often seems to be short, the longer such vaccination is postponed in young pigs, without risking the health of the herd, the better.

5) This procedure has, to date, always worked satisfactorily with one possible exception. That exception was a recent herd in which the primary infection still is in doubt, but seemed to be chiefly an encephalitis.

I can not, however, recommend the above procedure as a temporary business builder because, in spite of advice to the contrary, the owner often loses interest in the erysipelas vaccinating after the cholera vaccination has checked the disease.

Fortunately, the use of cholera virus never seems to injure an erysipelas herd, but if other complications are suspected, the virus can be delayed until such complications are under control.

When I do vaccinate pigs under 6 to 8 weeks old with erysipelas antiserum and culture, I always recommend that these young pigs be given a booster shot of culture alone about eight to ten weeks later. I started this after having immunity "breaks" in three herds of shotes, four and one-half to six months after they had been vaccinated as baby pigs (1943). Such a break in shotes which are not quite ready for market is embarrassing as well as costly, and means a lot of hard work in revaccinating. I am told that others have experienced such breaks as early as three months after vaccination.

This booster vaccination has seemed entirely successful in five years of use, but this may just be luck. Possibly, they would not have been affected anyway.

TRANSMISSION

Perhaps the most puzzling question about swine erysipelas is why infection is not produced when supposedly susceptible swine are brought in contact with supposedly virulent infective material. There seem to be three possible explanations: (1) The pathogen may at times be relatively avirulent; or (2) the resistance of the individual may be temporarily too strong, but it certainly seems that a third factor is necessary in producing infection; (3) this factor conceivably could be an inanimate catalytic agent such as some changing soil condition, or it could be a condition created by some food element consumed. There is actually evidence to support the latter theory. Frequently, many hogs have sickened shortly after eating an animal carcass, after getting into a sack of tankage, after breaking into a field of corn or being fed new corn, or even after being turned into a new pasture or pen. It might even be that some insect carrier is involved, although few insects are abroad in the winter when a few cases do occur.

It is also possible that weather conditions may be a factor (and some folks might even blame the zodiac). A weather factor might account for the disease appearing, at times, to be seasonal and also for its prevalence in certain years. At one time, we thought of erysipelas as mainly a May-June and a September-to-November disease, but less so in recent years. It also has appeared to be prevalent in cycles. We saw much of it in 1943 and 1944; then its incidence declined until July, 1948, when the present upsurge started. In the first six months of 1949, we saw more and tougher cases of erysipelas than in any preceding eighteen months.

RECENT EXPERIENCES

During the decline in the cycle, 1944 to 1947, many farmers became indifferent toward the disease. A few chronic arthritic cases or even a few deaths were merely charged to profit and loss. Some farmers kept a bottle of erysipelas antiserum on hand and treated any pig that seemed sick or lame.

Two of the three farmers referred to previously, whose herds had immunity breaks at four and a half to six months after simultaneous vaccination as baby pigs, have never vaccinated since and have had no serious losses. Most of our clients have just waited until the disease appeared in their herds before they called for help. This policy seemed economical because their losses cost much less than vaccinating every year.

However, the picture has changed decidedly in the past twelve months, and a few herds have suffered considerable losses. The disease is not only more prevalent in swine of all ages, but either the specific antiserum available is less potent or the virulence has changed so that the infection is more resistant to it.

We are told that several years ago anthrax became much less responsive to antiserum treatment. We also know that DDT, which had been effective against flies in 1947, has been impotent since then. Is a similar shift in specificity occurring with swine-erysipelas antiserum? Until July, 1948, vaccinating an infected herd had, with the exception of 3 or 4 pigs, always protected those not yet visibly sick. However, in a herd of 300 pigs, a year ago, about 20 became acutely ill up to thirty-six hours after treatment. A few similarly sickened, after vaccination, in four herds during May and June, and just last week (July 8), in a herd of 340 cholera-immune pigs, 6 died suddenly in the forenoon. When vaccinated with culture and liberal doses of antiserum that afternoon, only about a dozen were noticed to be sick. Twenty-four hours later, 20 more were acutely ill, and the next day still a few more showed acute symptoms.

EFFECTIVENESS OF PENICILLIN

Whether the antiserum has lost some of its curative value, I can not say because I no longer use antiserum alone. Fortunately, I had learned of the apparent curative value of penicillin, so for the past eighteen months, I have always combined it with erysipelas antiserum for affected individuals. It seems to be effective, but one often has to return to acutely infected herds once or twice daily, up to forty-eight hours, to treat new cases and re-treat others in an effort to avoid chronic sequelae.

If one had time to take temperatures of the entire herd, the late developing cases might be detected and headed off with penicillin. However, taking such temperatures, except on the sows or in small herds, is out of the question. I have recently thought of trying penicillin prophylactically by adding some to the antiserum when vaccinating the unaffected individuals in acutely affected herds. It might be more economical than the repeated visits, the heavier doses, and the losses which may have occurred. However, what would be the effect of penicillin on the simultaneous culture?

Proof of anything with respect to swine erysipelas is debatable, but perhaps one proof of the effectiveness of penicillin is that when typically acute erysipelas cases die, after receiving penicillin, specimens taken from them frequently prove to be sterile at the diagnostic laboratory. If penicillin can apparently destroy the bacillus in a septicemic case, would it not also kill the culture? Another possible indication of the effectiveness of penicillin is that after a quick recovery, following its use, a marked relapse may occur. Apparently, the specific antiserum had been unable to hold the advantage after the effect of the crystallin penicillin had terminated. A repeated dose of penicillin has invariably produced complete recovery in such cases.

Recently, erysipelas antiserum has also failed to prevent the development of chronic arthritis. Previously, we expected only those most acutely affected, when the herd was treated, to develop arthritis. In the past few weeks, however, many apparently healthy pigs in two affected herds later developed typical arthritis in spite of liberal doses of antiserum with culture.

Herd A, consisting of 133 pigs, 3 to 5 weeks old, suddenly developed peracute erysipelas. One pig was noticed sick in the evening and by morning 4 were dead and 12 were visibly ill. These were given penicillin at the rate of 1,000 units per pound, in antiserum, while the apparently normal animals were given the same liberal doses of antiserum plus culture and their ears were notched as required. Three of the affected pigs died in a few hours and 1 died two days later. Penicillin was repeated on a few of the sickest pigs twelve and twenty-four hours after the original dose. Now, five weeks later, 43 of the 125 pigs (35%) have developed typical, chronic, erysipelas arthritis and 29 of the 43 have notched ears indicating that they were not visibly sick when vaccinated.

We were called to herd B, consisting of

77 fine 3-month-old pigs, when a few were in the first stages of acute erysipelas. The 15 slightly droopy pigs checked had temperatures of 105 to 108 F. These were given penicillin in erysipelas antiserum and seemingly recovered rapidly. The 62 apparently well pigs were given a similar dose of antiserum plus culture. Four weeks later, 2 of the 15 previously sick pigs had developed a mild arthritis, but so had 8 of the 62 that had seemed well when treated. This is about 13 per cent of each group.

Even the penicillin seems less effective than it was a year ago, when a much smaller percentage of acutely ill pigs later developed arthritis. However, there are two factors that possibly could be responsible: (1) The pigs affected this year were younger; and (2) the disease seemed more acute this year.

What will the future bring? Will the virulence of the disease again recede, must we develop new specific antibiotics, or will we just put up with greater losses?

I firmly believe that penicillin is of great value in treating swine erysipelas, but it was a nuisance to handle in its early available forms. Instead of puttering with several small vials, we can now have a million or more units of crystallin penicillin in one larger vial. The prolonged effect of penicillin which is prepared for slow absorption, such as the oil solutions, is indicated in individuals that have been ill more than one day and also in retreating cases not normal in twenty-four hours, but we often skip it because it requires a separate syringe and, unless warmed, the solution is too heavy for quick handling. A more dilute, lighter solution would be greatly appreciated by the busy practitioner.

NEW DESICCATED CULTURE

Within recent months, our armament for controlling swine erysipelas may have been fortified by another improved product. Time alone will tell, but it is possible that the new desiccated culture, because of its much greater stability, may stimulate a more consistent and longer immunity than the short-lived liquid culture has produced in the past. If so, baby pig vaccination might prove to be adequate without subsequent booster shots.

CONCLUSION

In conclusion, I am sorry that I have been able to suggest so little that is constructive in the battle against swine erysipelas. I also fear that this report may leave you even more confused than you may have been before. However, if it has given anyone a clearer conception of just what an inconsistent, unpredictable disease swine erysipelas is, this discussion may have been of some benefit.

ADDENDUM

Since this paper was presented (July 13, 1949), we have experienced a recurrence of swine erysipelas in less than three months. A herd of 160 was treated on May 20, 1949, with erysipelas antiserum and liquid culture when 2 sows and several baby pigs developed acute, positive erysipelas. Eighty-nine days later, August 17, 4 pigs, which were about 3 weeks old when vaccinated, became acutely ill with typical erysipelas. They responded nicely to penicillin in swine-erysipelas antiserum, except for chronic arthritis developing in 1 that had been so ill it could scarcely creep. The entire herd was vaccinated with cholera antiserum and virus on August 17 and no more cases developed.

Collecting Cud

The item in the November JOURNAL (p. 379) prompted Dr. K. V. L. Kesteven, Animal Industry Branch, FAO, to send us the following note:

> More than twenty years ago, while farming in Australia, I was taught by a Danish farmer to collect the cud from a healthy cow by watching the cud rise in the esophagus until it was within a few inches of the pharynx, then punching the cow solidly in the ribs and catching the cud which was coughed out as a result. The procedure depends on good timing but is not difficult, and the technique is easily acquired with little practice. The cud can then be made up as a drench, but generally, if it is placed in the cheek, the cow will chew and swallow it.
>
> The Danish farmer assured me that in Denmark the treatment of cows out of condition, particularly after calving, by transfer of cud from a healthy cow, was an age-old practice.

Pounden and Hibbs tell how the recovered bolus of rumen content may be used to supply the correct bacteria and protozoa to unthrifty calves (JOURNAL, Jan., 1949:33). These same authors (*Hoard's Dairyman*, Sept. 25, 1949) give two reasons for the deficiency: separation of calves from other stock, and consumption of grain to the exclusion of good quality roughage.

The practicing veterinarian of today cannot limit his practice to the treatment of sick and injured animals. Preventive medicine is constantly being demanded by clients.—*J. N. Campbell, D.V.M., Minnesota.*

Clostridium Infections in India

ARLAN W. McCLURKIN, D.V.M.

Allahabad, India

IN SEPTEMBER, 1948, I was confronted with a very interesting and unusual problem of differential diagnosis of a disease that caused the death of 23 calves, 5 days to 5 months of age, 6 buffaloes (carabao) of the same age group, 4 Zebu cows, 1 old Zebu bull, 10 sheep, and 4 goats.

The Agricultural Institute was inundated by the waters from the Jumna River in the highest flood level in many years. Only a few acres of the Institute escaped flood water, and our milk stock, hogs, sheep, and goats were evacuated to higher ground near the calf pens. Our water system failed, as the well was under water, and all animals drank the flood water for approximately two weeks.

About ten days after the animals started drinking the flood water, and before the flood had completely receded, 2 calves about 2 months old became sick and died within a few hours. Their temperatures ran to 107 F. and 108 F., respectively. One had a swelling of the jaw and neck, but the other had no visible swellings. Because of the age, high temperature, and swelling of the jaw of one, and the short course of the disease, a tentative diagnosis of anthrax was made, and they were buried without autopsy.

The next day it was apparent that the disease was spreading to the other calves as well as to the buffaloes, and it appeared that we had an extensive outbreak of anthrax to deal with.

Thereafter, blood samples were taken from all animals at, or just before, death. However, no anthrax bacillus could be found. Some of the blood was inoculated into a rabbit, but the rabbit did not die.

LESIONS

As no anthrax bacillus could be found by microscopic examination, those calves and all others that died were autopsied. With the exception of 1 Zebu cow and the Zebu bull, all had one characteristic lesion in common.

The livers were moderately swollen, moderately friable, and had varying degrees of icterus. No infarcts were observed. The spleens were somewhat swollen in some calves, while apparently normal in others. Two sheep had spleens that were greatly swollen and semiliquid. There was no constant enteritis or gastritis, but about half the animals had a mild inflammation in the abomasum. Kidneys and lymph glands appeared normal. The lungs of 1 goat were severely congested. There were no swollen internal muscles; however, 6 calves showed swelling of the masseter muscles. In the entire course of the disease, there was not a single case of lameness or swelling of muscles of any quarter in the young animals. All autopsies were performed just after death and, in a few cases, the animal was killed in a moribund state in order to perform the autopsy before dark. The Zebu bull was not autopsied as he died late in the evening. Several of the animals bled from the body openings.

Except for the first 2 calves, a blood sample was taken from the jugular vein of each animal at or just before death. All were negative for bacteria when stained with methylene blue and examined microscopically.

Sections were taken from the liver and spleen. Impressions were made on a slide and stained with methylene blue. In every case, we found a large rod-shaped, gram-positive bacillus. They were 1 to 1.5 μ wide and 5 to 8 μ long. They were usually single or in pairs, but in several instances a long chain of organisms was seen. After standing for a few hours, subterminal spores could be demonstrated. The organism did not grow on agar, but multiplied profusely when inoculated into bouillon and dextrose medium sealed with heavy mineral oil. No other bacteriologic procedures were possible. Five liver specimens were injected into rabbits. Two rabbits died in sixteen hours and the other 3 lived.

Cow 858 had two distinct additional lesions. There was extensive subserous hemorrhage and the spleen was greatly swollen but firm. In the blood film, a small gram-negative, bipolar bacillus could be seen. It was 0.5 μ wide and 1 to 1.5 μ long. The bipolar staining was more easily seen when dilute basic fuchsin was used. This organism was found in addition to the large bacillus already described.

TREATMENT

Six animals visibly sick and having temperatures of 106 to 109 F. were given peni-

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cillin in 80,000-unit doses every three hours until death. Approximately a half million units were given per animal, but the course of the disease was not altered.

A group of 15 animals, 4 to 5 months old, were separated. Two were depressed but the remainder appeared normal. The temperatures of the 2 depressed animals were 106 F. and 106.5 F., respectively. The other animals had temperatures varying from 102.4 F. to 103.8 F. Each animal was given 80,000 units of penicillin every three hours until four doses had been given, after which no more penicillin was available. Twelve hours after the last dose of penicillin, the temperatures were again taken. They ranged from 102.1 F. to 103.2 F. in 10 animals, and the other 3 were normal. The 2 with the temperatures of 106 F. and 106.5 F. had died. The next day, 2 more became moribund and died, making a total of 4 deaths in this group of 15 animals.

Upon examination, another group of 12 calves, 2 weeks to 2 months old, were found to have temperatures of from 102.4 F. to 106 F. Each animal was given 60 cc. of blackleg antiserum, or blackquarter antiserum as it is called out here. Of the 12 calves, only 2 died. The temperatures were not retaken, and no more antiserum was available.

At the time when the disease was running out in the younger group, 1 Zebu cow showed evidence of an infection in the foot, characterized by extreme swelling which rapidly spread up the leg within a few hours. Crepitation was evident, but it did not seem to be hot or particularly painful. The infection probably gained entrance from a previous infection of pododermatitis. Sulfamethazine (2 oz.) was given by mouth and 100,000 units of penicillin were injected every four hours until 2 million units were given. The course of the disease was arrested, but the excessive swelling that extended to the thigh caused the skin on the medial side of the thigh, hock, and metatarsal region to slough. The animal was destroyed ten days later. The temperature reached only 103 F.

At the same time, a buffalo cow showed a severe swelling and edema of the ventral commissure of the vulva. Penicillin was given in 200,000-unit doses until 1 million units were administered. The swelling began to subside early in the course of treatment, but the skin around the ventral commissure of the vulva sloughed. However, because of the relatively small area involved, the animal made a slow but uneventful recovery. In both these animals, a rapid loss of weight was evident. The buffalo's temperature remained normal.

Another Zebu cow showed evidence of swelling at the throat and a temperature of 103 F. Because cow 858, showing the bipolar organism, had also shown swelling of the eye which extended to the face and throat and a temperature of only 103.5 F., this cow was given two doses of penicillin (200,000 units each) and 300 cc. of Pasteurella antiserum. The cow made a rapid recovery and was normal twelve hours after treatment.

DIAGNOSIS

The eventual diagnosis made was mixed Clostridium infection in the calves, involving *Clostridium chauvei*, probably *Clostridium septicum*, and possibly others. Some of the organisms were motile, because in staining one specimen it was improperly fixed and the organisms were very active by means of peritrichous flagella. I was unable to duplicate the demonstration of motility. The measurements correspond to those given for *Clostridium welchii* more nearly than any other Clostridium.

On several occasions, long chains similar to those described for *Cl. septicum* were observed. Two rabbits were very susceptible to two different specimens of liver while 3 others were resistant to samples of liver. The fact that 10 of 12 calves running high temperatures responded to large doses of blackquarter antiserum would seem to indicate that *Cl. chauvei* was involved; however, it is possible that the antiserum sold here for blackquarter also contains antibodies for other Clostridium. I had written to the Central research laboratories to inquire if any biological products for *Cl. septicum* were available, and they replied that blackquarter vaccine and antiserum could be used for that disease also.

The significance of the results from the use of penicillin are not clear. Penicillin is said to be effective in, and indicated for, all cases of Clostridium infections, and it seemed that some value was derived from its early use in both cows and calves, but apparently doses of at least 200,000 units per injection are indicated.

The disease that occurred in the Zebu cow and the buffalo with the swollen leg and vulva, in my opinion, was malignant edema. The disease that occurred in Zebu cow 858 probably resulted from a mixed infection of Clostridium and Pasteurella species.

During the original outbreak, no hogs died, but in January, 1949, a 200-lb. hog died suddenly. On autopsy, the peritoneal cavity was filled with serosanguineous fluid; the liver was swollen and friable, with large hemorrhagic infarcts and pale infarcts. The

spleen and lungs were normal, but there were subepicardial hemorrhages on the heart. The same type of organism as previously described was found in the liver and kidneys. The kidneys had multiple, small, pale infarcts.

SUMMARY

It seems to me that the exact cause of the trouble cannot be determined without complete and extensive bacteriologic analysis and animal inoculations. Some of the local veterinarians suggested that *Trypanosoma evansi* might be involved, as surra is known to cause apoplectic deaths in cattle following a flood, and has in the past been confused with anthrax. But in view of my many examinations of blood films, the absence of Trypanosoma suggests that surra was not involved.

I am greatly impressed with the difficult and perplexing problems that arise in differentiating between anthrax, blackquarter, other Clostridium diseases, and pasteurellosis, in an area where all these diseases may be expected.

Intravenous Aureomycin Treatment in Acute Staphylococcic Mastitis

On the evening of July 10, 1949, a call was made to the dairy barn at the University of Connecticut to see Val Vasha Storrs, a 5-year-old registered Ayrshire cow which had suffered a teat injury, making it impossible for the milker to start the milk flow.

The end of the involved teat was soaked in a warm antiseptic solution, the scab removed, the frayed teat portions resected and the quarter milked out by hand. Penicillin in oil, 300,000 units was injected into the teat cistern. Penicillin ointment was applied to the end of the teat and a finger cot applied. Local treatment was continued for three days, when the cow seemed to have recovered.

On the morning of July 17, the cow was reported giving abnormal milk from the previously injured quarter. The milk was watery, yellow, and appeared to contain blood serum. The quarter was swollen and very hard, but did not feel hot when palpated. Rectal temperature taken at the time was 101.7 F. A sample of the milk was taken to the diagnostic laboratory of the Department of Animal Diseases for examination. The quarter was infused with 200 mg. of aureomycin hydrochloride (aureomycin*) in ointment form, and the herdsman was advised to bathe the quarter with hot water at frequent intervals. By evening the cow's temperature had risen to 104.5 F., her right knee was swollen, and she refused food and water. At this time, 250 ml. of a 25 per cent solution of sodium sulfamethazine (sulmet) was administered intravenously (i.v.). The following morning, her temperature had dropped to 102.2 F. and she was eating again, though not well. A second 200 mg. of aureomycin in ointment was infused into the quarter. The preceding therapy plus another 250 ml. of sulmet i.v. on July 19 held the temperature below 103 F. The bacteriologic report received on that date revealed the presence of hemolytic staphylococci.

Late at night on July 20 and on the morning of July 21, the rectal temperature had risen to 103.5 F., and food and water consumption stopped once more. Another 250-ml. dose of sulmet i.v. was given, but by evening the temperature had mounted to 104.6 F. The animal's eyes were beginning to "sink," the knee was swollen more severely, and milk production had ceased from all four quarters. Procaine penicillin G in oil (1,500,000 U.) was injected intramuscularly.

On the morning of July 22, the temperature persisted at 104.2 F.; the eyes were sunken more than before and were becoming cloudy; dyspnea was present. At this time, it was decided to attempt a "rescue" with aureomycin administered intravenously. An initial dose of 5 Gm. of aureomycin with sodium glycine buffer was given in 500 ml. of sterile distilled water. Twelve hours later, a second injection of 2.5 Gm. in 250 ml. of sterile distilled water was made.

On July 23, all symptoms seen previously had become exaggerated, with the exception of the temperature which remained at 104.2 F. Morning and evening administrations of 2.5 Gm. of aureomycin were made but by evening the cow was comatose, her eyes milky white, and the advisability of further treatment was questioned.

The crisis was reached on the morning of July 24 when a temperature drop to 102.4 F. was observed. Morning and evening injections of 2.5 Gm. of aureomycin were made. When attended in the afternoon, she was eating and, as described by the herdsman, was "brighter-eyed;" she also was more observant of her surroundings.

On July 25, the cow's temperature was 102.2 F. She was up, eating, and all previously noticed symptoms, including the clouded eyes, had vanished. The 2.5-Gm. injections of aureomycin were continued for four more treatments at twelve-hour intervals. The quarter was treated with 1.5 Gm.

*The aureomycin used was supplied for investigational purposes by the Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

of streptomycin in penicle in three divided doses, also at twelve-hour intervals.

At no time during the course of aureomycin i.v. injections did the cow show any evidence of reaction to the drug. Each 2.5 Gm. was administered by the drip method over a period of fifteen to twenty minutes. A total of 27.5 Gm. of aureomycin was used during the five-day period of treatment.

Temperatures taken twice daily for the ensuing week-and-a-half were never above 102 F.

Milk flow began to return, although to a lesser extent, in the involved quarter. Rapid production gains followed, and one month later the cow was producing 40 lb. of milk per day. Before the attack, her production had been 48 lb. per day and was on a downward trend.—*H. Lincoln Easterbrooks, D.V.M., Department of Animal Diseases, University of Connecticut, Storrs.*

Chronic Cyclitis and Encephalitis in a Dog

Much has been written concerning the syndromes initiated by neurotropic viruses. The pathology in these diseases has been described by various authors. However, lesions in the ocular system are seldom reported. The following case history deals with a case of chronic cyclitis and encephalitis in a 5-month-old male puppy of the Terrier type.

The patient was presented for examination on March 15, 1947. The major complaint was intermittent spasmodic convulsions involving the jaw and facial muscles (champing fits). He was also suffering from anorexia, malnutrition, cachexia, and nervousness.

The puppy had two or three seizures on the day he was presented for examination. He had been procured from the local pound about one month previously, and had been fed only once daily since that time. He was thin, had a dull coat, and an apparent weakness in the hind legs. Temperature was 102 F., the mucous membranes pale, and the bowels were tympanitic.

The intestinal tract was irrigated. Proper instructions as to diet, iron and yeast, and phenobarbital were dispensed. Canine distemper antiserum, crude liver, and vitamin B complex were injected.

On March 17, the fits recurred. The temperature at this time was 103.5 F. The same injectables were used and a sulfonamide dispensed. On March 18, the dog was reported to be very well. He ate and behaved normally. On March 19, diarrhea set in and the temperature was 101.5 F. During the examination, he had a champing fit and, when placed on the floor, walked aimlessly about, bumping into the equipment and walls of the room. The eyes had a vacant stare, the pupils were dilated, and there were no reflexes to light.

The owner, very much disturbed by the seizure, requested euthanasia. The animal was dispatched by the use of pentobarbital sodium intravenously.

Postmortem examination revealed no gross abnormalities except for a catarrhal condition in the bowel.

Tissues were sent to the Army Institute of Pathology for histologic examination. The report indicated:

Kidneys.—A few calciferous casts were seen in the collecting tubules; otherwise no lesions were recognized.

Lungs.—Lipoid histiocytes were quite numerous in some areas, usually around bronchioles and alveolar ducts as well as in the lumen of bronchioles and alveoli.

Jejunum.—No significant lesions.

Sections from the brain were sent to Dr. C. F. Schlotthauer for further study. His report follows in part.

There was generalized encephalomalacia (degeneration) throughout the cerebrum. Many of the large nerve cells were cretinized and in some areas there was evidence of edema. There was slight if any infiltration of lymphocytes.

The cerebellum, however, revealed scattered areas of encephalitis characterized by marked degeneration or destruction of nervous tissue and infiltration of cells of hematogenous origin (lymphocytes). This was most marked in the region of the cerebellar-pontine angle. There was also marked destruction of the Purkinje cells in some areas. The lesions were characteristic of those caused by neurotropic viruses.

No cell inclusion bodies were found.

A further report from the Army Institute of Pathology dealing with the eyes states:

Eye A.—The meshwork of the filtration angle, the coat of the iris and the ciliary body were infiltrated with lymphocytes and plasma cells. The choroidal vessels were moderately congested. There were degeneration of the rods and cones, cystoid degeneration of the outer nuclear layer, and attenuation of the inner nuclear layer. There was a small focus of lymphocytes in the optic nerve head.

Diagnosis, chronic cyclitis.

Eye B.—The changes were very similar to those seen in eye A—chronic inflammation of the ciliary body, degeneration of the rods and cones, cystoid degeneration of the outer nuclear layer, attentuation of the inner nuclear layer, and small foci of lymphocytes in the optic nerve head.

Diagnosis, chronic cyclitis.—*Matthew A. Troy, D.V.M., Pelham, N. Y.*

Further Observations on the Immunizing Value of Brucella M Vaccine Against Brucellosis

I. FOREST HUDDLESON, D.V.M., Ph.D.

East Lansing, Michigan

IT WAS pointed out in a previous publication[1] that certain mucoid-growth phases of *Brucella suis*, when prepared in the form of a vaccine (designated as Brucella M vaccine) and injected into normal guinea pigs, are capable of engendering in such animals a high degree of resistance against infection with all three species of Brucella. Large numbers of living cells of the mucoid-growth phases in question, when injected into normal guinea pigs, were found incapable of producing a progressive type of disease such as is produced by virulent S or IR phases of Brucella.

In a recent publication,[2] it was stated that the subcutaneous injection of 10 living cells of one of the mucoid-growth phases of *Br. suis* into either pregnant or nonpregnant heifers, failed to produce a progressive type of infection. In other words, no evidence was obtained which indicated that organisms of this growth phase established themselves in the tissues of the animals or reverted to the normal, S phase after injection.

It was also pointed out that when noninfected adult cattle or calves are injected subcutaneously with 10^{10} live cells of the mucoid-growth phase, blood serum agglutinins for an S phase antigen fail to develop in a titer higher than 1 : 100. As a rule, specific agglutinins in a titer of 1 : 25 were not demonstrated in the serums of most the animals sixty days after injection, and in none ninety days after injection. If any M vaccinated animals developed a positive blood reaction within three or four months after vaccination, the reaction could be attributed to natural infection present at the time of vaccination.

Studies have been conducted to determine the value of Brucella M vaccine in preventing the spread of brucellosis in 22 privately owned herds, all of which contained animals showing serologic or clinical evidence of the disease. Of the 772 negative adult animals in these herds that were injected with M vaccine and left to associate with, and be exposed to, more than 100 infected cattle, only 23 (approximately 3%) became infected during a twelve- to fourteen-month period after vaccination.

Brucella M vaccine was also injected into 73 adult animals in three herds in which no reacting or suspicious-reacting animals were present. At the end of a one-year period, all were still negative to the serum agglutination test.

In none of the 22 herds in which M vaccine was used to determine its value in preventing the spread of brucellosis, were there any noninfected adult animals left unvaccinated. This omission has been severely criticized by many. Several individuals have expressed the opinion that it is not possible to measure the immunizing value of a specific agent in a herd of cattle when no animals are left unvaccinated, regardless of the fact that the herds were known to have been free from infection shortly before vaccination.

An effort has been made to answer, partially, the criticisms of the method that was used in conducting previous immunization studies by conducting small, controlled experiments on adult animals in four herds. While the numbers of animals involved are not large enough to furnish results that are conclusive, it must be admitted that the results obtained in each of the herds point in the same direction.

The herds to be discussed are designated by the letters A, B, C, and D.

Herd A.—This herd contained 16 adult animals of which 5 were reactors. Of these, 3 had aborted within two months before the herd was taken under study. Six of the negative animals were left unvaccinated, and 5 were given M vaccine. During a twelve-month period following vaccination, 3 of the unvaccinated animals became reactors. All of those that received M vaccine remained negative to the blood test.

Herd B.—The comparative test in this herd was made on 10 newly introduced negative, pregnant heifers. Five were injected with M vaccine and 5 left as controls. All associated with 11 reactors. At the end of the first year after vaccination, all of the vaccinated animals were negative to the blood test. Of the 5 controls, 2 were showing a positive and 2 a suspicious reaction to the blood test.

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Journal Article No. 1068, n.s. From the Michigan Agricultural Experiment Station. Approved by the director of the Experiment Station.

Herd C.—A comparative test was also made on 11 pregnant heifers newly introduced into a herd which contained 33 reactors. All were from a herd known to be free from infected animals. Seven heifers were given M vaccine and 5 left as controls. At the end of one year, 1 of the vaccinated animals was showing a suspicious reaction, but 3 of the 4 controls were showing a strongly positive agglutination reaction.

Herd D.—This herd contained 306 animals, mostly adults. All were negative to the blood test at the time of using M vaccine, but 2 reactors had been removed from the herd during the previous year. Of the total number, 218 were injected with M vaccine and 88 left as controls. During the first ten-month period after vaccination, all those vaccinated remained negative to the blood test. Of the 88 controls, 2 developed a positive and 2 a suspicious blood reaction.

During the past 18 months, the Brucella Laboratory at Michigan State College has produced and distributed, through Michigan veterinarians, 71,000 doses of Brucella M vaccine for use on cattle in Michigan. An additional 3,000 doses have been sent under Federal permit to state agencies in seven other states for experimental use on animals in privately owned herds or in herds assembled for experimental purposes.

The veterinarians in Michigan are required to obtain a permit from the State Department of Agriculture in order to use M vaccine. The same agency requires each farmer, who wishes to have M vaccine injected into his animals, to sign a waiver releasing from any financial responsibility all those connected with the use of the vaccine.

During this period of wide use of M vaccine, the laboratory has had an excellent opportunity to acquire more information pertaining to large-scale production and the problems which arise from distribution to, and use by, a large number of veterinarians.

In addition to what has been learned about the production, distribution, and use of M vaccine, one should be in a position at this time to determine whether its wide use has been harmful, beneficial, or of no value to the livestock industry of Michigan. Thus far, from personal investigation, from inquiries made of veterinarians and of farmers, the writer has obtained no evidence of any harmful effects from the use of M vaccine.

References

[1]Huddleson, I. F.: The Immunization of Guinea Pigs with Mucoid Phases of Brucella. Am. J. Vet. Res., *8*, (1947):374-379.

[2]Huddleson, I. F., and Bennett, G. R.: The Vaccinal Immunizing Value of A Mucoid-Growth Phase of *Brucella suis* Against Brucellosis in Cattle. Mich. Agric. Exper. Sta. Quart. Bull. 31, (1948):139-156.

Leucocytic Extract

In 1916, Dr. R. A. Archibald, a prominent veterinarian of Oakland, Calif., developed a biological product which he called "leucocytic extract." We have had personal contact with it, because thirty-three years ago our 4-year-old son was near death from double mastoiditis following an attack of measles. We rejected the advice of an ear specialist who advocated immediate surgery, and our family physician used the new product as an alternative. Twice daily for six days he gave our son an ampule of it, and the boy made a complete and uncomplicated recovery. Moreover, I have used this product for treating various infections in horses, cattle, dogs, and cats.

Recently, our capable young family physician proposed the use of a "new preparation," leucocytic extract—(Archibald), in treating me for an attack of influenza. He regarded it as a new product probably because it had not been produced for many years following the death of Dr. Archibald. —*Fred H. McNair, D.V.M., Berkeley, Calif.*

Brucella bronchisepticus has been cultured from the lungs of small pigs suffering from a respiratory condition. Although few die in the acute stages, most cases become chronic and result in rather severe stunting. The most striking lesion is the presence of an egg-shell-colored edema of the lungs. There is usually not much lung involvement. Favorable results have been achieved by treating the affected pigs with mixed canine bacterin.—*J. D. Ray, D.V.M., Nebraska.*

Treatment of Tetanus

A technique involving injection of tetanus antitoxin, followed in thirty minutes by 1 Gm. (in man) of urotropine intravenously, and in another half hour by a second injection of antitoxin is reported by M. L. Couvy (*Bull. Acad. Nat. Med.*, 131: 143-148). Only 1 death resulted in 17 cases treated by this technique. It is believed that urotropine may increase the permeability of the barrier between the blood and the cerebrospinal fluid, thus promoting the passage of drugs and antibacterial substances from the blood to the cerebrospinal fluid.

The purpose of a public relations program is to increase public respect and public understanding.

Canine Filariasis in North Queensland

A 4-year-old male Scottish Terrier was presented with severe respiratory symptoms. Three weeks before, the dog had been bathed and shortly thereafter was seen to be panting heavily and to appear excessively tired. The dog was presented to an irregular practitioner who inexplicably diagnosed a gastrointestinal upset and gave castor oil for three days. The appetite was fair throughout.

Examination revealed a temperature of 101.8 F., pulse 120 and soft, respiration 108 and dyspneic. Auscultation revealed diminished heart sounds and loud vesicular noise. The peritoneal cavity contained a small quantity of fluid. A fecal flotation test showed no parasitic ova and a blood smear no microfilaria. There was a moderate anemia with red cell count of 3.73 million and Hb. of 11 (Tallqvist); white cell count of 21,450 with 75 per cent polymorphonuclears and a sedimentation rate of 66 mm. per hour. The results of a urinalysis were specific gravity, 1.043; a cloudy, dark amber color; acid reaction. All other urine tests were negative with the exception of a mild indicanuria. Repeated tests for microfilaria gave consistently negative results.

In this region (North Queensland, tropical coast), filariasis is widespread and we could not exclude the possibility of this disease even with this repeated negative evidence. The leucocytosis and high sedimentation rate suggested an active destructive process, and since the temperature was normal during the entire course of illness, a tentative diagnosis was made of chronic noninfectious pneumonitis. Digitalis was administered for the next fortnight along with iodides, ammonium chloride, and eucalyptus. The dog was then returned to us in a bad state. The temperature and respiration was as originally noted, and the pulse 168 and weak. Mucous membranes were very pale and the dyspnea distressing. At this time, percussion revealed areas of dullness on the posterior aspects of the chest. The abdomen was grossly distended with fluid.

The blood picture was as follows:

r.b.c.	3.65 million per cmm.
Hb.	8.5 Gm./100 cc.
red cell vol. per 100 cc. of blood	38.0
sedimentation rate	22.0 mm. per hour
w.b.c.	60.0 thousand per cmm.
polymorphonuclears	69.0 per cent
stab cells	17.0 per cent
lymphocytes	8.0 per cent
monocytes	8.0 per cent

The liver was easily palpable and tense. Cardiac stimulants and diuretics were administered. During the next three days, the white cell count fell steadily to 26,800. As a last resort, an exploratory laparotomy was performed under morphine, using procaine for the local incision. Anesthesia was excellent. About 900 cc. of amber fluid was removed from the peritoneal cavity. The liver was enormously swollen and there was moderate degeneration; otherwise, the abdominal contents were normal. The next few days brought no change and, being convinced of the hopelessness of the condition, euthanasia was performed.

Postmortem.—Liver, huge, congested, with fatty degeneration. Heart, small, thin-walled, and slightly dilated. No heartworms. Lungs, entire substance of the diaphragmatic lobes, intermediate lobes, and the posterior parts of the cardiac lobes was involved in red and gray hepatization with sharply defined infarcts in cardiac lobes. The gray areas were hard and tumor-like. Pulmonary arteries into all involved areas were plugged with a necrotic caseous material and in the small peripheral arteries, masses of entwined filaria were extracted. Most were immature worms from 2 to 3 in. long. All other abdominal viscera were normal.

The following attracted our particular notice: (1) At no time were microfilaria noted. (2) Temperature was continuously normal and appetite unimpaired. (3) White cell counts were always abnormally high and even approached leucemic levels, although the predominant cell was the polymorph. (4) The blood sedimentation rate was greatly elevated. (5) A continuing moderate anemia was present.

It was evident from the beginning that the primary disease involved the heart-lung field with a noninfectious but destructive lesion. It is postulated that a sudden exertion or stimulus could have carried a mass of developing heartworms into the pulmonary arteries, a sort of parasitic embolization. —*M. R. Gardiner, V.M.D., Stratford, N. Q., Australia.*

The Risk of Prophecy.—The great Vienna surgeon, Theodor Billroth (1829-1894), wrote in 1883 that "The surgeon who attempts to suture a wound of the heart will lose the respect of his colleagues."—*From "Blue Baby" by Geneviève Maurin,* 1949.

Veterinarians are essential, in fact they can do more than physicists, chemists, and other scientists, in outlining, performing, and evaluating the animal work with radioactive tracer substances.—*C. S. Hobbs, Ph.D., Tennessee.*

Gammexane for Mange

Ectoparasites of farm animals have been very effectively controlled by gammexane*. Our greatest problem has been mange in swine, goats, and dogs. This report will deal with the use of gammexane in that disease.

Before treatment was begun, the sarcoptic mite was identified by microscopic examination of skin scrapings in the goats and swine.

Conditions Involved.—The use of gammexane in controlling sarcoptic mange in hogs has been interesting and conclusive because economic conditions have forced us to reduce the concentrate feed 50 per cent. This has left the hogs on a deficient ration on which they lost weight, made little growth, and were in very poor condition. It has been stated that animals on a poor ration are far more susceptible to sarcoptic mange than those on a well balanced, adequate one. In fact, some local lesions of mange have been known to disappear when the animals were fed an improved ration (Veterinary Helminthology and Entomology by Monnig, p. 370).

The age of the hogs involved ranged from adult sows to 3-month old pigs. There were approximately 60 hogs in the group. The stage of the disease varied from early infection (redness of large areas of the skin) to thickening of the skin with crusted scabs over large areas.

Treatment.—Treatment consisted of washing the hogs with water and soap to loosen and remove the scab, then applying the powder to each pig individually by hand, rubbing it into the affected areas. This was done once. Thereafter, it was discovered that the hogs liked to roll in the powder if given an opportunity. Once a week for four weeks, gammexane was placed on a small area of brick floor and the hogs allowed to roll in the powder, getting it on their backs, in their ears, and transferring it to the parts of the pen on which they rubbed and scratched themselves.

Because of the life cycle of *Sarcoptes scabiei*, the hogs were allowed to roll in the powder four times, making a total of 5 applications. However, after the fourth application, the lesions were disappearing and the skin was taking on a normal appearance.

Mange in Goats.—Sarcoptic mange in goats has been effectively controlled by four weekly applications of gammexane to the affected areas. The disease responds well to the treatment but, if the lesions are in areas covered with abundant hair, it is important to apply the powder with the fingers, thoroughly rubbing it into the skin. Usually, sarcoptic mange of goats attacks areas around the ears and face where the hair is relatively short, but I have seen a few cases of long standing where the mange has spread to the back, abdomen, and thighs.

Because *S. scabiei* can live for three weeks in the kraals, it is advisable to apply gammexane weekly for at least four weeks to prevent a recrudescence of the disease among animals just treated. It has been my observation that after 2 treatments the lesions show marked improvement, but because the kraals are infected, it is well to continue treatment for four weeks. No attempt has been made to disinfect the kraals.

Mange in Dogs.—I have successfully treated dogs with mange of undetermined etiology. That is, the lesions had the appearance of mange, but neither *S. scabiei* nor *Demodex canis* could be demonstrated by microscopic examination of skin scrapings. The lesions had the appearance of the dry form of demodectic mange. Four dogs were treated by applying gammexane on the affected areas once a week until the skin began to improve, and hair had begun to grow again. About four to six weeks were required for recovery.

Gammexane was not toxic to any animal, and hogs which had taken it into their mouths showed no harmful effects.—*Arlan W. McClurkin, D.V.M., Institute Veterinarian, Allahabad, India.*

*Gammexane is benzene hexachloride, gamma isomer.

The Field of the Country Practitioner.—Contrary to the expressed fear that farmlands would fall into the hands of big corporations to the disadvantage of the veterinary profession, a survey (*Prairie Farmer*, Sept. 17, 1949) revealed that 95 per cent of the 419,000,000 acres of farmland in 13 North Central States is owned by individuals; and 70 per cent of that area is operated by owners and 30 per cent by tenants. The swing is away, not toward, corporate and institutional ownership, as nine years ago about 10 per cent of farmland was owned by corporations.

The desirable time for distemper vaccination which will confer permanent immunity is after all of the teeth have erupted. Until then, puppies should be protected with serum injections at semimonthly intervals. —*J. A. Butterworth, D.V.M., Illinois.*

Sufficient concrete information is on hand to justify continuance of the brucellosis-eradication programs. The research now being conducted will serve to assure continued progress.—*S. H. McNutt, D.V.M., Wisconsin.*

Studies on Newcastle Disease
IV. The Presence of Newcastle Disease Virus in Eggs of Hens Vaccinated with Live Vaccine

J. E. PRIER, D.V.M., M.S., T. W. MILLEN, D.V.M., Ph.D., AND J. O. ALBERTS, V.M.D., Ph.D.

Urbana, Illinois

VAN ROEKEL[1] and Jungherr[2] reported the isolation of Newcastle disease virus (NDV) from fresh eggs. DeLay[3] isolated the virus from infertile eggs which had been incubated for seven days and from embryos dead on the fifteenth day of incubation. He obtained eggs from flocks during an outbreak of Newcastle disease. Thompson and Osteen[4] isolated virus from the yolks of 3 out of 85 pooled egg-yolk samples from hens with Newcastle disease.

The present study was undertaken to determine whether NDV is present in eggs from farm flocks vaccinated with live Newcastle disease vaccine. Eggs from experimentally immunized hens were also examined for NDV both before and after challenge with a virulent strain of virus.

MATERIALS AND METHODS

Studies on Farm Flocks.—Ten chicken flocks having no history of Newcastle disease were selected in coöperation with a commercial hatchery. Blood samples were taken from 5 birds in each flock and tested for the presence of Newcastle disease hemagglutination-inhibition antibodies. Only flocks with negative reactions were used. The birds in each flock were then vaccinated with a commercial live Newcastle disease vaccine.

Eggs were obtained from each of these flocks at periods varying from four to 109 days after vaccination. Twelve eggs at a time were collected from each flock. Six eggs from each group were examined for hemagglutination-inhibition antibodies, using the egg test described by Schmittle and Millen.[5] Yolk from the remaining 6 eggs was inoculated into the allantoic cavity of normal 10-day-old chicken embryos. The inoculated embryos were candled daily for six days following inoculation. Any embryos found dead during that period were examined for virus by the hemagglutination test.

Laboratory Studies.—Eighteen normal hens were experimentally immunized against Newcastle disease with either live virus vaccine, a combination of live virus and immune serum, or immune serum alone. The birds were then challenged with 1 ml. of a 10^{-5} dilution of live NDV (approximately 100,000 embryo lethal doses) at intervals from nine to twenty-two days after vaccination.

Eggs were obtained from these hens after vaccination, and incubated and examined for active virus. The eggs were candled on the tenth day of incubation; 9 which were either infertile or contained dead embryos were removed. These eggs contained the first dead embryos detected following vaccination. From each egg, 0.1 ml. of yolk was inoculated into the allantoic cavity of 3 normal 10-day-old embryos. The eggs were candled daily for six days following inoculation. All dead embryos were then tested

TABLE I—Examination of Eggs from Flocks Vaccinated with Live Newcastle Disease Vaccine*

Flock (No.)	Days after vaccination	HI reaction of eggs	Examination for virus
1	67	6+	neg.
1	70	6+	neg.
1	86	6+	neg.
1	98	6+	neg.
1	109	6+	neg.
2	7	6−	neg.
2	15	6−	neg.
2	21	6−	neg.
2	36	6+	neg.
3	16	6−	neg.
3	23	3−; 3+	neg.
3	30	6+	neg.
4	19	6−	neg.
5	12	6−	neg.
5	19	6−	neg.
5	27	5+; 1−	neg.
6	4	6−	neg.
7	16	6−	neg.
8	11	6−	neg.
9	27	6−	neg.
9	37	3+; 3−	neg.
9	41	3+; 3−	neg.
9	58	5+; 1−	neg.
10	18	6−	neg.
10	19	6+	neg.
10	20	6+	neg.
10	21	6+	neg.
10	32	6+	neg.
10	42	6+	neg.
10	48	6+	neg.
10	57	6+	neg.
10	63	6+	neg.

*For each test, eggs from 6 hens were picked at random from the flock.

[1]Contribution from the College of Veterinary Medicine, and the Illinois Agricultural Experiment Station as a collaborator under North Central Region Agriculture Experiment Station coöperative research project entitled NC6.

for the presence of virus by the hemagglutination technique.

Forty-one nonincubated eggs were also examined for virus. Embryo inoculations were made as described in the preceding paragraph.

Experiment 1—Studies on Farm Flocks.—The results of examination of eggs from the ten flocks are recorded in table 1. Live NDV was not isolated from any of the 192 eggs used.

TABLE 2—Examination of Eggs from Experimentally Immunized Hens for Newcastle Disease Virus

Hen	Birds challenged	Days after vaccination: Eggs examined	Virus isolated
143	22	14, 18, 19, 20, 23, 25, 26 28, 29	neg.
176	16	9[2]	neg.
165	16	30, 35, 42	neg.
160	14	4[2]	4
168	22	18	neg.
149	14	8[2]	neg.
178	14	11, 17, 20	neg.
125*	6	6[2], 29, 30	neg.
151	14	5[2]	neg.
157*	9	5[2], 21, 22, 23, 24, 26, 27, 28, 34	5[2]
181	15	11[2]	neg.
139	15	8[2]	neg.
177	9	6[2]	neg.
196	Not vaccinated	22 days after challenge	neg.
195	16	5, 12, 33	neg.
159	..	5	5
142	22	17, 20, 23, 25, 26	neg.
141	22	25, 26, 28, 29, 30	neg.

* Live virus not used to vaccinate.
[2] Bird naturally exposed before challenge.
† ...s were incubated for ten days prior to examination.

An equal number of eggs was examined for hemagglutination-inhibition antibodies. Antibodies were found as early as nineteen days after vaccination, and were still present in one group of eggs 109 days after vaccination.

Experiment 2—Laboratory Studies.—The results are presented in table 2. Fifty eggs were examined for active NDV. Nineteen of them were examined before the challenge dose of virus was administered, 1 was examined on the same day the challenge dose was given, and 30 were examined after challenge.

Active virus was found in the eggs which 3 hens laid four, five, and five days after vaccination. These eggs contained the first dead embryos after vaccination. Two of the positive hens had been vaccinated with live virus, but virus was present in 1 egg from hen 157 before she was experimentally exposed to live virus. She was kept in a battery with birds vaccinated with live virus, and was apparently naturally exposed before receiving the challenge dose. No virus was found in eggs from hens that had resumed normal egg production following vaccination.

DISCUSSION

The results indicate that active virus does not remain in the eggs of vaccinated hens after normal egg production is resumed. It is possible that several eggs in a group set for hatching may contain some active virus. There is little evidence to indicate, however, that these individual eggs would survive the incubation period and hatch as infected chicks. Specific antibody in the yolk of eggs from immune hens would probably inhibit the development of active virus.

SUMMARY

1) Newcastle disease virus was not isolated from 192 eggs gathered at random from ten farm flocks vaccinated four to 109 days previously with commercial live Newcastle disease vaccine.

2) Live virus was found in the yolks of 2 out of 50 eggs from 18 experimentally vaccinated birds, four and five days, respectively, after vaccination. No live virus was found in eggs taken at various periods one to twenty-six days after challenge exposure of the vaccinated hens.

3) Live virus was found in 1 egg from a hen naturally affected with Newcastle disease. Though this hen showed no clinical symptoms, she produced soft-shelled eggs and developed an HI titer.

References

[1] Van Roekel, H.: Proc. Conf. Newcastle Dis., U. S. Department of Agriculture, (May, 1946): 17.

[2] Jungherr, E.: Proc. Conf. Newcastle Dis., U. S. Department of Agriculture, (May, 1946): 93.

[3] DeLay, P. D.: Isolation of Avian Pneumoencephalitis (Newcastle Disease) Virus from the Yolk Sac of Four-Day-Old Chicks, Embryos and Infertile Eggs. Science, *106*, (1947): 545.

[4] Thompson, C. H., and Osteen, O. L.: A Technique for the Isolation of Newcastle Disease Virus, Using Streptomycin as a Bacterial Inhibitor. Am. J. Vet. Res., 9, (1948): 303-305.

[5] Schmittle, S. C., and Millen, T. W.: Detection of Hemagglutination-Inhibition Antibodies in Unincubated Eggs. Cornell Vet., *38*, (1948): 106.

Carpentier, in his thesis (Paris, 1949) for "veterinary doctor" warns against placing too much dependence in antibiotic therapy for metritis. Notwithstanding its remarkable action on the myo- and endometrium, its proper role is that of an adjuvant to the usual means of sterilizing the infected uterus.

The first manifestation of acute traumatic gastritis in dairy cows is an abrupt drop in milk flow. A cow milking 20 lb. morning and evening may drop to 2 lb. in twelve or twenty-four hours.—*V. Tharp, D.V.M., Ohio.*

NUTRITION

Vitamin B Deficiencies and Enteritis in Swine

The etiology of swine enteritis is a confusing subject. Doyle has shown that swine dysentery differs from necrotic enteritis. Gibbs has established a relationship between enteritis and hog cholera. Regarding the other types, however, there remain two distinct schools of thought. One group considers enteritis a filth-borne disease usually accompanied, if not initiated, by an invasion of *Salmonella choleraesuis*. The other believes that malnutrition and undernutrition is the important consideration.

This latter view is substantiated by a report by R. W. Luecke, F. Thorp, Jr., W. N. McMillen, H. W. Dunne, and H. J. Stafseth (*Technical Bull.* 211, Michigan State College, Agricultural Experiment Station, East Lansing, March, 1949).

Pigs raised on 11 different farms in Michigan were used, and the bulletin reports a detailed study of 80 cases of severe enteritis involving the cecum and colon. The conclusion reached is that enteritis from nutritional deficiencies occurs far more frequently than most investigators have recognized, and that deficiencies of niacin, pantothenic acid, and possibly ribo-

Fig. 1—A group of pigs before treatment. Age, approximately 80 days. Average weight, 20 lb.

Fig. 2—The same pigs as shown in figure 1 after thirty-five days of treatment. Daily gain was 1.19 lb. per pig.

flavin are involved in producing this particular type of enteritis. The present report supplements the earlier findings of this same group that niacin deficiency caused severe symptoms on a ration containing 15 per cent protein, while the same degree of deficiency caused only mild symptoms when the ration contained 19 per cent protein.

The condition studied was found in weanling pigs, was usually associated with poor conditions of feeding and management, and was most prevalent when the ration consisted chiefly or entirely of the cereal grains. In the herds affected, one fourth to one half of the pigs suffered from diarrhea. These pigs weighed 20 to 40 lb., while most of the unaffected pigs weighed more than 60 lb., and always appeared healthy, vigorous, and in good condition. These observations would seem to preclude the presence of an infectious agent.

The hair of the affected pigs was dry, lusterless, and staring. The ears drooped and the tail hung pendant. The vertebrae, ribs, and hip bones, as well as the head and neck, were prominent. The abdomen was "tucked", even though the water intake remained good so long as the animals were able to rise and walk to it. Temperatures were normal or very slightly elevated.

The poorest of the deficient pigs were taken to the experiment station for study and treatment. Because the appetites were very poor, intraperitoneal injection was selected as a necessary step. A solution of 50 mg. of thiamine, 50 mg. of riboflavin, 250 mg. of calcium pantothenate, 250 mg. of niacin, and 50 mg. of pyridoxine was made in 100 cc. of distilled water. The pigs were then fed rations of corn, soybean oil meal, meat scraps, and a complex mineral mixture, which was supplemented with the same vitamins as had been injected. When a weight of 60 lb. was reached, the feeding of vitamin supplements was discontinued.

The diarrhea cleared up in from five to twenty-one days, but 11 of the 80 pigs (14%) died, most of them during the first week. The average daily gains of the survivors ranged from 0.71 to 1.21 lb. This varied with the breed and the extent of the nutritional deficiency.

Public health workers are recognizing more and more that contact with infected animals is a greater source of undulant fever in the United States than is consumption of unpasteurized dairy products from Brucella-infected cows. Universal pasteurization of milk has by no means been a solution to the human brucellosis problem. —*N. B. McCullough, M. D., Illinois.*

Vitamin T

In a study of the nutrition of termites in South America, Goetsch discovered in these insects a factor containing vitamin B, which he named vitamin T. Thought at first to be an ingredient of the termites, it was later found to be derived from the cryptograms they ate. The fraction was prepared by dialysis in the presence of certain yeasts. The dialysate was described as a compound of amino acids with small molecules and the vitamin B complex which, combined, constitute the new vitamin.

Vitamin T acts particularly on the organs in the course of their rapid growth and is a notably active stimulant of regeneration of cutaneous wounds and chilblains. It augments the vitality in man and animals through better digestion and utilization of their alimentation. When and in what form the new product will be available for practical use is not stated.—*From La Presse Médicale, abstr. Recueil de Médecine Vétérinaire, July, 1949.*

Dairy Ration, Southern Style.—Tests in the South show that a concentrate by-products mixture of dried citrus pulp, dehydrated sweet potatoes, peanut meal, and cottonseed meal (37.5, 37.5, 12.5, and 12.5%, respectively, by weight) is a satisfactory dairy-ration substitute for a standard mixture containing 70 per cent of grains, the USDA reports. Replacing the standard mixture pound for pound in comparative tests, the southern by-products formula afforded practically identical milk and butterfat production, at a reported saving (in 1948) of 35 to 43 cents per 100 lb. of milk.

Green corn poisoning, which comes from eating the nubbins left in sweet corn fields, responds nicely to oral doses of charcoal and dextrose, intravenously. Calcium gluconate is indicated for cases which have rumen stasis. The scouring cow isn't the one that is going to die. A dosage of 30 or 40 charcoal bolets is repeated in about eight hours. If the animals haven't drunk water before you are called, instruct the owner to keep them off of water at least twenty-four hours.—*D. E. Trump, D.V.M., Minnesota.*

Obedient to the people's demand, the number of work horses, mules, sheep, and silver fox is declining in the U. S. A. However, the reverse is true for horses of sport and pleasure, beef and dairy cattle, swine, goats, and the finer types of fur bearers (mink, chinchilla).

EDITORIAL

The Year in Retrospect

This is the time of year for taking stock of what has been accomplished in order to map a logical program for further advances for the future. As a start, it may be well to look at the accomplishments of 1949, as reported in the pages of the AVMA Journals.

General Practice

The general practitioner has had access to more, and reliable, data regarding the nature of hyperkeratosis. (The nonspecific term x-disease should be dropped.) After a question was raised regarding implicating DDT as a causative agent, this factor was completely eliminated as a cause by a careful study and detailed scientific analysis of the organs of animals which died of hyperkeratosis.

Rumen digestion of coarse, fibrous forage and of simple chemicals which contain nitrogen (urea) seems much simpler and more logical in the light of additional studies reported during the year. The microflora of the rumen—bacteria and protozoa—are responsible, rather than the digestive juices themselves. These microörganisms secrete enzymes which digest cellulose. The products of this action are used for growth and multiplication, along with other soluble substances—including urea and ammonia. In so doing, the products are synthesized into complex proteins. These become available to the ruminant when the protozoa are killed by digestive juices and then assimilated.

Bloat in cattle and sheep can be controlled more effectively by introducing into the rumen a highly polymerized methyl silicone which increases the surface tension of each tiny bubble contributing to frothy bloat. This permits tiny bubbles to become larger and larger, until they rise to the surface and may be eructated in a normal manner.

Foot-and-mouth disease may be held in check more effectively as a result of a new method of producing vaccine in the mucous membranes of tongues and rumens of cattle which have been slaughtered for human use. Previously, all vaccine was produced on living animals, which were then almost completely wasted because it was necessary to destroy the carcasses—except for the tongues on which vesicles had formed.

Brucellosis eradication has been brought nearer to realization by encouraging reports of M vaccine in newly infected herds; by use of the ring milk test in making county-wide surveys to locate infected herds; by studying agglutination response following vaccination and revaccination; by reports of new therapeutic agents which give encouraging results under specific conditions; and possibly the greatest promise of eradication comes from the activity of a newly appointed committee of practitioners which will stimulate interest and participation in area programs by practicing veterinarians.

Hypocalcemia yields to a more definite diagnosis and a more accurate prognosis on the basis of results shown by the Sulkowitch test and the response to treatment at a rate indicated by the test.

Anaplasmosis is more clearly understood by virtue of basic work reported, and is in line for control or elimination if treatment with some of the newer antimalarials is as successful in field cases as in experimental ones.

Small Animal Practice

Canine filariasis seems to respond more favorably to newly developed drugs for intravenous injection than to previously used treatments. This condition has resisted diagnosis and treatment, and its successful elimination will be appreciated by dog owners and veterinarians everywhere.

The fracture fixation panel at the Detroit convention, while not demonstrating techniques new to practitioners in this field, did present a comprehensive review for the general practitioners who fix fractures only occasionally, and for the general public of the television audience.

Ear drainage is simplified in a technique described for use by practitioners called upon to correct chronic inflammation and its attendant irritation.

ANTU poisoning in dogs was described for early diagnosis and to serve as a warning in the use of this new raticide. It also suggests precautionary measures for pet owners.

Intraärterial medication for the purpose of obtaining a rapid and a high concentration of a drug or an antibiotic agent in a

limb offers an additional opportunity for service. When accompanied by a restricted flow from the limb, by tourniquet or pressure sleeve on the large veins, it increases the percentage of recoveries in otherwise hopeless cases.

Administration of anesthesia through the vena cava offers another refinement of practice which may develop some definite fields of use.

Intraneural, bipolar, electrical stimulation was reported as a means of improving the accuracy of diagnosis in certain injuries to the nerves and/or the surrounding tissues.

ITEMS REQUIRING CLASSIFICATION

A number of items were reported but remain to be integrated with the practice of veterinary medicine. Among these, the modern veterinarian should know something about:

the antihistamines and the conditions under which they may be used to advantage, as well as the ailments which may respond to their use;

sludged blood and its relation to infection, inflammation, trauma, and other ailments;

atomic warfare, and the part which practicing veterinarians may be called upon to implement in such an eventuality;

curare, and its use as a relaxant in certain conditions such as tetanus, when muscular spasm interferes with normal activity;

the newer antibiotic agents, aureomycin and neomycin, and their fields of usefulness in veterinary medicine;

the electronic microscope and its adaptation to use with animals;

superovulation and the transplantation of ova in domestic animals. While still far from a problem of general practice, it has caught the popular fancy and its possibilities should be understood.

ASSOCIATION ACTIVITIES

The annual convention of the AVMA afforded an opportunity to hear reports on many of the newer developments in the wide field of veterinary medicine. These were not limited to the section programs officially scheduled, but to an equal or greater degree in the meetings of some twenty-odd specialized groups within the profession.

Throughout the year, the Association has maintained contact by sending its officers and members of the office staff to meetings of constituent associations, related groups in the professional and business fields, and to conventions and meetings at which its panels, exhibits, and displays were being shown to specialized groups.

The Canadian Veterinary Medical Association was formally organized and held its first annual meeting in Winnipeg. This marks an integration of the provincial veterinary medical associations, which should help to strengthen their position on the continent as well as at home.

The International Veterinary Congress met for the fourteenth time, in London, and focused world attention on the importance of veterinarians in maintaining human food supplies by guarding the health of animals. The representation drawn by this Congress, and the publicity given to its activities, mark a step forward in the recognition of the profession of veterinary medicine.

If there is a moral to this review, it is simply to impress upon every veterinarian the dignity and the breadth of his chosen profession. In so far as any individual community is concerned, the profession is judged by the member who resides in it. Every veterinarian owes it to himself and to his community to maintain a high professional standard.

The Veterinary Service of Europe

Interviews with European visitors to the AVMA office, personal correspondence with colleagues abroad, published articles by officers of the U.S. Army Veterinary Corps on duty overseas, conversations with returned members of the International Veterinary Congress, and the current veterinary literature of Britain, France, Italy, and the Low Countries, consort to paint a dark picture of the distressing effects of the war on the status of veterinary science in Europe. The thirst for knowledge of what transpired during the wartime blackout impressed an American animal pathologist during a European tour.

The importance of rehabilitating the veterinary service of the war-torn countries was never as generally realized as during the present postwar period. The all but complete suspension of allied education and research during the ten eventful years and the awakened world striving to regain the ground lost in the production of protective food is a lesson on the re-appraisal of veterinary medicine in the uppermost bracket of political economy. Confronted with food shortage and considerable public indifference toward properly applied veterinary science, Great Britain was first to realize the significance of perfecting and expanding its animal health program—a

step now publicly admitted to have a lasting potential. On the other hand, countries whence veterinary education and discipline sprang, not able to maintain their *status quo* owing to military invasion and occupation, now feel the weight of interrupted veterinary service to such a degree that close relation of animal health to national welfare should never again be questioned, anytime, anywhere. When lowered standards of living, down to the level of actual hunger, become an open political issue, nothing matters as much as increasing food tonnage by building up a more competent veterinary service.

CARE Book Program

"Today countless professional men abroad are working in a scientific and intellectual blackout. They have little knowledge of current research, new techniques and theories. They are still handicapped by the destruction and isolation of war." This description of the plight of professional colleagues in foreign countries devastated by war indicates the need for technical, scientific, and professional books as basic tools of reconstruction.

CARE — Coöperative for American Remittances to Europe, the nonprofit organization which did such an outstanding job in sending food packages to Europe after the war—has made its facilities available, at the request of UNESCO, for the purpose of sending needed American technical and professional books to the places abroad where they will do the most good, such as universities and other cultural institutions whose libraries were destroyed. A number of national organizations in the medical and other fields are coöperating in various ways with the CARE book program by soliciting contributions from their members and affiliated societies for the purchase of new books and periodicals to be sent abroad. It is not a program of sending used books—books should not be sent by contributors.

One of the major categories in the list of needed titles is veterinary science, and the AVMA some time ago pledged its support to efforts to obtain contributions. Leaflets describing the program were mailed to constituent associations several weeks ago and these organizations are bringing the matter to the attention of their members at their meetings.

Checks and money orders should be sent directly to CARE Book Program, 20 Broad Street, New York 5, N. Y. Donors of $10 or more may specify, if they wish, the country, type of institution, and category of books to be sent. The AVMA office has received many requests from veterinary colleagues abroad since the war for up-to-date information on veterinary matters; the CARE program described here shows how this may be done with assurance of best results and as a worthy project that will do much for lasting benefits in war-devastated areas, far more lasting than some of the other aid measures that are now in effect. It is hoped that veterinarians generally will help support the program by their contributions.

Leaflets describing this project are available on request from the AVMA office or from CARE at the address given above.

The JOURNAL Salutes the Canadian Veterinary Medical Association

"The News" section of this issue reports an event of great significance, historically and professionally, to our colleagues in Canada—the final organization and first annual meeting of the newly chartered Canadian Veterinary Medical Association. President C. P. Zepp, Sr., was the official representative of the AVMA and took part in the inaugural ceremonies.

In addition to the good wishes expressed by Dr. Zepp on that occasion on behalf of our association, the JOURNAL salutes the Canadian counterpart of the AVMA and wishes it every success in its work of advancing the veterinary profession and its services in the Dominion. Canadian veterinarians have long felt the need for a professional association to represent them on a dominion-wide basis as the AVMA represents the profession nation-wide on this side of the border. We congratulate the veterinary leaders in Canada on the successful culmination of many years of effort; the new organization is certain to be a potent help in strengthening the position and influence of veterinary medicine in North America. We look forward with increased confidence to continuation and expansion of contacts with our Canadian neighbors. These contacts have been pleasantly maintained with them as individuals and through their provincial associations, and may now become even closer.

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CURRENT LITERATURE

ABSTRACTS

Equine Thromboarteritis

In the horse, thromboarteritis obliterans localizes frequently at the level of the iliac arteries or the ileofemoral trunk. Usually, the occlusive process appears in a previously injured artery, the initial precipitation process taking place in the intima.

Functional disorders of ischemic origin take place in a series, including a characteristic intermittent lameness, tachycardia, congested mucous membranes, and profuse sweating. The local examination reveals a cold extremity, absence of pulsation of arteries of the leg and pastern, dryness and coldness in contrast with generalized sweating.

Treatment includes medical and surgical phases. Among these are: (1) avoid sudden chills; (2) wash daily with lukewarm water; (3) avoid use of strong antiseptics like iodine, phenol, etc.; (4) keep extremity well covered and avoid long walks; (5) balanced feeding; antispasmodic treatment using acetyl-choline or sodium citrate 2 per cent, or sodium chloride 5 per cent, the last two intravenously twice or three times weekly, gradually increasing the dosage. Diathermy, heat lamps, and hot air fans have been used with a measure of success to change the moist gangrene to dry gangrene.

Surgically, sympathectomy of the periarterial lumbar ganglia may be resorted to in order to improve the local circulation; neurectomy or blocking of peripheral nerves to suppress pain; resection of parts affected with gangrene; amputation of limb; embolectomy or arteriectomy. Daily administration of 20 Gm. of potassium iodide has given good results.—[*Horacio F. Llort: Pathology of Obliterating Thromboarteritis in the Horse. Bol. of. col. Med. vet. nac. Cuba (Jan.-Feb.,* 1949): 31-32.]—O. A. Lopez-Pacheco.

Zoötechnic Terminology

The book contains a list of 2,868 technical terms pertaining to general zoötechnics and specialized zoötechnics, each of which is subdivided into stable and annexes, incubation, reproduction, castration, shoeing, cattle, swine, horses, poultry, feeds and feeding, and veterinary medicine, with a simple but exact definition of each. In some instances synonyms are given too.

The material, arranged in strict alphabetical order under each subject, may prove an invaluable aid, especially for the Spanish-speaking professional man who has acquired his professional training in a foreign language.

For the veterinarian, there is a list of 727 veterinary terms directly related to this field.

Although the author recognizes the incompleteness of the publication, it does not detract from the merit of the work involving a great deal of thorough investigation and painstaking effort.—[*Breviario Terminológico de Zootecnia y Veterinaria. Compiled by Jaime Bagué, V.M.D. Paper. 80 pages. Government of Puerto Rico, Department of Agriculture and Commerce, San Juan, P. R.* 1948. *Free.*]—O. A. Lopez-Pacheco.

Dermatitis in Pigs

A dermatitis in pigs, characterized by red pimples, is caused by a virus. It may occur as an acute disease, or in a latent phase. Weaning, castration, unfavorable hygenic conditions and undernourishment may precipitate an acute outbreak. Improved hygiene and nutrition are suggested as preventive measures. Digestible proteins (meat-bone meal, fish-bone meal, boiled bovine blood, and raw goat milk) produced favorable results.

Animal proteins have a regenerative power and promote, in a specific way, recovery of the affected skin. The proteins of meat, and especially of blood, produce a hyperemia and increase the elasticity of the skin. Overdosing, instead of hastening recovery, may have the opposite effect.—[*Rek: The Influence of Some Animal Albumins on Dermatitis in Pigs. Czechoslovakia Vet. Magazine,* 4: (*April* 25, 1949): 189-196.]—V. Shovajsa.

Dourine

Exceptionally, the incubation period in dourine may not be as short as textbooks indicate, and may be prolonged to twelve months. The acute stage may be followed by a latent form without discernible symptoms.

Clinical diagnosis is easy in the acute stage but should be confirmed by microscope examination of vaginal smears, which are more significant than serologic reactions. After the acute symptoms subside, clinical diagnosis becomes more difficult, and the serologic test is more important. However, the complement-fixation test is not completely dependable—some infected animals fail to react, and some uninfected animals do react. Neither the Fulton test nor hematologic examination are specific.

Chronic cases are best diagnosed by inoculation of male rabbits. The trypanosomes could be cultivated only on blood agar and on the allanto-chorionic membrane of chicken embryos.

The blood of experimentally inoculated horses contained trypanosomes for a short time, but these could not be cultured from blood drawn from naturally infected field cases. Strain virulence varies widely, as shown by incubation period, symptomatology, and pathogenicity.

Therapy with neosalvarsan is highly effective; no remission occurred during an observation period of twenty-one months. Treated horses recover quickly and are soon able to work normally.

Infection was not acquired by a stallion following service of infected mares after treatment. —[*Domansky: A Contribution to the Knowledge of Dourine. Czechoslovakia Vet. Magazine,* 4: (*April* 25, 1949) : 177-189.]—V. SHOVAJSA.

Vaccine and Antiserum in Leptospirosis

The author's strains of Leptospira isolated from silver and arctic foxes, cattle, and horses showed marked differences in pathogenicity from standard human and canine strains. They were pathogenic for foxes, goats, sheep, calves, foals, and dogs, producing anemia and icterus. In horses and cattle, hemoglobinuria also appeared. In swine, cats, mink, rabbits, and guinea pigs, there was anemia but no icterus or hemoglobinuria. They were pathogenic for man but not for white rats or mice. The author grouped his strains in a subspecies: *Leptospira icteroanemiae.* Serologically, the strains of *L. icteroanemiae* were divided into two types. Type I, comprising one equine strain, was closely related to *Leptospira grippotyphosa.* Type II, comprising the remaining ten strains investigated, were related serologically to the Monyakov strain isolated by Terski in 1937 from a man with nonicteric leptospirosis. The author's strains were serologically distinct from standard Weil, Akiyami B, and *Leptospira canicola* cultures.

Antiserum was obtained from horses and cattle hyperimmunized against types I and II. It was highly effective prophylactically and therapeutically under experimental and field conditions.

Heated, formolized, and phenolized vaccines were only 67 to 78 per cent effective against challenging doses which killed all controls. A chinosol vaccine was prepared which was 100 per cent effective in foxes and calves. Immunity was found to persist for thirteen months and was tested no further. Agglutination titers varied from 1:1,000 to 1:5,000. The chinosol vaccine has been widely used in fur and farm animals in the field with less than 0.01 per cent breaks, compared to 10 to 20 per cent incidence in unvaccinated controls. Two doses of vaccine are given with a seven-day interval. Sick animals receive serum alone; suspects receive serum followed in seven days by vaccine.

Leptospira antiserum and chinosol vaccine have been approved by the Soviet Government Control Commission, and more than 300,000 animals have been treated with good results. Leptospirosis has been eliminated (liquidated) in the fur-farming industry.—[*S.Y. Lubashenko, Central Research Laboratory for the Fur Industry, USSR: Vaccine and Serum Prophylaxis and Serum Therapy in Leptospirosis of Animals. Veterinariya,* 26, (July, 1949) : 6-9.]—R. E. H.

Bovine Tuberculosis in Germany

A procedure, based on allergic reactions, is contemplated for identification of animals infected with tuberculosis. All measures previously employed have failed. The present plan envisions the development of strains of animals naturally resistant to the disease, but it is admitted that this will require much investigation, especially in male animals.—[*Mader: Can Tuberculosis be Controlled and Eliminated by Breeding Measures Alone? Deutsche. Tierärztl. Wchnschr., 56, June* 15, 1949.]

Latent tuberculosis in cattle may flare up into the acute form as a result of unfavorable circumstances such as change in management, heavy production, forcing for show, multiple gestations without adequate rest periods, and vaccination. Attention is called specifically to the advisability of eradicating tuberculosis before resorting to brucellosis vaccination.—[*Waygold: Loss of Resistance Against Tuberculosis from Vaccination. Ibid., 56, July* 1, 1949.]—R. J.

Possible Relation of Human Gastroenteritis to Bovine Infection

Routine culture of a stool from an infant revealed the presence of *Salmonella typhimurium.* A request for the history from the physician submitting the specimen revealed that several members of the family had suffered from gastroenteritis. It was noted that the cattle on the farm had run a similar course of diarrhea previous to the human illness. Since the drainage from the barn could get into the well, it was postulated that the water could be the source of the human infection. The water sample submitted was unsuitable for culturing, but a stool from one of the calves revealed the presence of *Salmonella typhimurium.*—[*An Outbreak of Salmonella Typhmurium in Alberta. Canad. J. Pub. Health,* 40, (*Sept.*, 1949) : 396-397.]

Migrations of Hypoderma Larvae

The routes pursued by the larvae of *Hypoderma bovis* and *Hypoderma lineatum* in migrating from the point of penetration to the site of their grubs in the skin of the back have never been satisfactorily explained. It was, however, generally agreed that the submucosa of the esophagus and tissues of the spinal canal were two points of predilection whence the larvae proceeded to complete their long intratissular journey. Critical studies of their migrations made in Germany, Norway, Holland, France, and North America were declared erroneous, inasmuch as the two species were not differentiated. By identifying the one from the other, Haberman and Morgan of the Wisconsin

Agricultural Experiment Station determined that *H. bovis* mobilizes in the spinal canal and *H. lineatum* in the esophagus, and thus they register a capital scientific fact, not published heretofore, on this remarkable parasitism. Differences found in the encephalopharyngeal skeleton of first stage larvae furnished the means of identification. Of 982 larvae isolated from esophageal sites, only 1 was *H. lineatum*, and of the same number taken from spinal canals, all but 7 were *H. bovis*, although both species of Hypoderma flourish in Wisconsin.—[*Warren O. Haberman and Banner Bill Morgan: The Occurrence of Hypoderma Larvae in the Spinal Canal of Cattle. J. Agric. Res.*, 78, (*June*, 1949) : 637-638.]

Brucellosis Therapy

Streptomycin and sulfadiazine were given subcutaneously and orally, respectively. The combination was effective in producing bacteriologic cures of experimental brucellosis in guinea pigs, and was better, in every instance, than either drug alone. Moreover, it was effective when given (again to guinea pigs) ten days after inoculation as well as on the day of infection. All controls were severely infected.

Most important, however, is the report that it was just as effective when given once a day as when the total was divided into five equal doses. When duly verified, and if it holds true for farm animals, this can have enormous veterinary significance.—[*L. W. Holm and S. H. McNutt: Brucellosis Therapy: Studies on the Effect of Streptomycin and Sulfadiazine in Experimental Brucellosis in Guinea Pigs. Am. J. Vet. Res.*, 10, (*Oct.*, 1949) : 336-340.]

Polyarthritis in Lambs Due to Contaminated Serum

Erysipelothrix rhusiopathiae contamination of serums used in England for protecting lambs against dysentery and pulpy kidney disease caused lameness leading to death in nearly 100 per cent of these animals within four months after inoculation. The contaminated serums were traced to one manufacturer. A traveling salesman had sold the major share directly to farmers, although in a few instances veterinarians had dispensed the products.

In some cases, symptoms appeared as early as two days after inoculation. Abscesses did not develop at the site of injection, but in one case, a purplish discoloration, resembling the erysipeloid of Rosenbach, was observed on the skin inside the thigh. Postmortem examination of an acute case disclosed that affected joints in the inoculated lamb contained an excess of turbid synovia, with ulceration of the articular cartilages and a small blood clot over the area of erosion. Regional lymphatic glands were enlarged and congested. In chronic cases, the periarticular tissues of affected joints were greatly thickened by fibrous tissue formation.

It is believed that the *Ery. rhusiopathiae* contamination originated with a batch of pulpy kidney serum. In order to strengthen lamb dysentery serum in its *Clostridium welchii* epsilon antitoxic fraction, the two serums were blended, thereby disseminating the infective agent.—[*C. M. Edwards: Polyarthritis in Lambs Following Serum Inoculation. Vet. Rec.*, 61, (*Feb.* 26, 1949) : 95-97.]

Hypervitaminosis A in the Dog

Hypervitaminosis A in the rat, mouse, and guinea pig, with concurrent bony changes and toxic symptoms, has been reported by numerous workers. Hypervitaminosis A of the dog has not been studied. Two thoroughbred, Greyhound pups, 1 male and 1 female, were selected for excessive vitamin A administration. Conclusions were: The dog responds to excessive doses of vitamin A. The response is characterized by loss of appetite, loss in weight, characteristic skeletal changes, hyperesthesia and exophthalmos. Laboratory findings show no significant alterations, with the exception of marked increases in vitamin A content of the blood and a late drop in blood lipids. Several photomicrographs of osseous and cartilaginous changes accompany the article.—[*C. L. Maddock, S. B. Wolbach, and Stephen Maddock: Hypervitaminosis A in the Dog. J. Nutr.*, 39, (*Sept.* 10, 1949) : 117-137.]

Niacin Deficiency in Swine

When swine were fed rations known to contain insufficient amounts of niacin, the first evidence of malnutrition was a decreased daily gain resulting from lack of appetite. This became evident in about the fourth or fifth week of the experimental feeding, and was followed in another week by a gray-black diarrhea which was constant in some cases and intermittent in others. The hair usually appeared rough, and some animals showed a mild, exfoliative dermatitis over the arch of the back and around the ears. Usually, the temperatures remained normal or rose very slightly.

The affected pigs presented a somewhat unbalanced blood picture. A moderate rise in leucocyte count was accompanied by a slight fall in hemoglobin and red cell count. There was a tendency toward neutrophilia. The maximum rise in leucocytes and maximum fall in erythrocytes approximately coincided with the onset of the diarrhea.

When pigs were maintained on the deficient rations for ten to twelve weeks, the diarrhea gradually disappeared, the appetite returned to normal, and a spontaneous recovery occurred when the body weight approached 60 lb.—[*H. W. Dunne, R. W. Luecke, W. N. McMillen, M. L. Gray, and Frank Thorp, Jr.: The Pathology of Niacin Deficiency. Am. J. Vet. Res.*, 10, (*Oct.*, 1949) : 351-356.]

BOOKS AND REPORTS

Veterinary Pharmacology

This volume is a combination of a textbook for students and a reference for practitioners, as have been the five which preceded it. In several respects, this edition is more complete than any of its predecessors, and the additional information is especially valuable because it falls in the newer fields of therapeutics. There is a much enlarged section on the sulfonamide drugs, which begins with a discussion of the action, absorption, and elimination of sulfonamides in general, and then continues with comparisons between 12 common sulfonamides. There is a similarly enlarged chapter on the antibiotic agents. Penicillin, tyrothricin, streptomycin, and streptothricin are discussed in some detail; while bacitracin, chloromycetin, clavicin, and aureomycin rate a paragraph each.

The largest single addition is a section by Dr. Alexander Zeissig on biologic diagnosis, prophylaxis, and therapy. It consists of a chapter on immunity and a companion chapter on the biologic products used in the prevention and treatment of some specific infectious diseases of animals. The first of these chapters deals with the principles which underlie the development of immunity and with the practices used to stimulate immunity or resistance. This is more than a routine statement of known facts—it is an interpretation of those facts in terms which all can understand and apply. For example, the cell-block theory of virus immunization is referred to as "a sort of medical musical chairs, with cheating," and is then traced to the cells and the body fluids. Attention is drawn to the fact that the blocking agent moves into a position within or on the body tissue which might otherwise be occupied by an agent of disease. Also, the blocking agent possesses antigenic and immunizing power in addition to keeping the virulent agent of disease away from the cells which it might otherwise damage.

As a text for students, and one which will be used by members of related professions, the book leaves room for some improvement. There is a lack of uniformity in listing references for supplementary study. Sometimes these are listed within the body of the paragraph, sometimes they are listed at the foot of the page, and sometimes they appear at the end of the chapter. Admittedly, this does not detract from the value of the book as a reference text for practitioners, but it does offer an opportunity for improvement.

One other change from previous editions should be mentioned. The binding is greatly improved. The "backbone" has been greatly strengthened so that the book may hold its shape despite the hard usage which a student text and a practitioner reference is expected to withstand. And the materials of which the covers are made are equally sturdy.

The book is a decided improvement over preceding editions, because the items enumerated are added to the basic information on pharmacy, prescription writing, and specific consideration of the vast assortment of drugs and therapeutic agents used by veterinarians.—[*Milks' Veterinary Pharmacology, Materia Medica, and Therapeutics. By H. J. Milks, Cornell University. 6th ed. Cloth. 720 pages. Alex Eger, Inc., 21 East Van Buren St., Chicago.* 1949. *Price* $10.00.]

Improved Stud Service

This book presents information regarding an improved stud service offered by Curtiss Candy Company Farms. In general, it carries the standard pedigree of each sire (production, show ring winnings, etc.) on one page, and a pictorial pedigree of the animal on the facing page.

In addition, it has short chapters on some of the factors which must accompany the use of good sires in order to develop good herds: care of the cow at calving time; raising the calf; care of heifers; hints to health control; soil management; and feeding.—[*Improved Stud Service. Curtiss Candy Company Farms, Cary, Ill. Paper.* 108 *pages. Price* $5.00.]

Nutrition of the Dog

This second and larger edition is a comprehensive discussion of canine nutrition. In addition to the nutritional discussions, there is information pertaining to commercial dog foods, dog food testing, kennels and equipment, reference books for dog lovers; one chapter, devoted to parasites and their control, is written by Dr. R. H. Udall.

The first eight chapters (173 pages) are devoted to a discussion of the individual ingredients that compose dog rations. In each chapter there is a discussion of carbohydrates, minerals, proteins, and water soluble vitamins. There is a historical review of the knowledge pertaining to each of these groups of ingredients, and a practical analysis of their importance in the ration. A comprehensive bibliography follows each chapter. Many references are made to the contributions to human health that have derived from the study of canine nutrition.

The last ten chapters deal with commercial dog foods; the ingredients of commercial dog foods; utilization of plant foods in dog rations; the inadequate testing of dog foods; the value of blood and bone in canine nutrition; practical feeding and management; kennels and equipment; and a chapter of questions and answers which was added at the suggestion of Dr. DeCamp. The previously mentioned chapters on parasites and reference books complete the list of subjects discussed. The books recommended in the last chapter are largely textbooks used in schools of veterinary medicine (for example, "The Physiology of Domestic Animals" by H. H. Dukes). It is doubtful whether such books can be understood by, or employed to the advantage of, the dog owner or the experienced kennel man.

It was pointed out in the review of the first edition in the JOURNAL (*104*, Feb., 1944: 101-102) that the objective as given in the preface, "To satisfy the needs of both the pet owner and the scientist" was too broad. This is still true in the present edition. The general practitioner and even the small animal practitioner will find long stretches of semi-arid historical and scientific review between the oases of meaty practical knowledge. The information is there and, for those who have the patience and time to dig it out, there is much to be gained. Better organization of the practical, historical, and highly technical, so that it would be more readily available to the experimentalist, the practicing veterinarian, and the pet owner, would make the book more valuable to all. The historical review of the nutritional developments will be of interest to many, but the reader who is seeking practical, everyday, concise assistance in feeding his dog correctly is apt to be discouraged before he discovers the information he desires.—[*Nutrition of the Dog. By Clive M. McCay. Cloth. 337 pages. Illustrated. Comstock Publishing Company, Inc., Ithaca, N. Y.* 1949. *Price* $3.50.]

Pregnancy Diagnosis in Animals

This book discusses the sex hormones and the diagnosis of pregnancy of mares, cows, and other animals. For each species, the author first considers the detection and behavior of the sex hormones in the organic fluids (blood, urine, milk,), and then the successive reactions which they produce during pregnancy. Details are given for the Cuboni test in mares, the Cuboni-Josef reaction in cows, and tests in other animals. The purpose is to present the information in such a way that the reader will not only understand, but will actually be able to perform the several tests described. There is also an extensive bibliography for supplemental study.—[*La Diagnosi di Gravidanze Negli Animali Mediante le Reazioni Biologiche e chimico-ormonali* (*Pregnancy Diagnosis in Animals by Means of Biological and Chemico-hormonal Reactions*). *By E. Cuboni. 238 pages. 42 illustrations, 1 in color. Istituto Sperimentale Italiano, Milan, Italy.* 1949.]—BONADONNA.

Rat-Borne Diseases

Federal public health officials prepared this manual primarily for health workers and sanitarians, but its utility stretches to every field where animal or human welfare is involved. It lists basic procedures for the prevention and control of rat-borne diseases, including murine typhus fever, plague, salmonellosis, Weil's disease, rat-bite fever, and trichinosis. Information on rodenticides is given in detail, with full regard for the protection of human beings and domestic animals. A large number of photographs, cartoons, architect's drawings, and easy-to-read charts add greatly to the value of the text.—[*Rat-Borne Disease Prevention and Control. Edited by Clyde F. Fehn, assisted by Alfred R. Kinney, Jr. Paper. 391 pages, varitype. Profusely illustrated. Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga.* 1949.]

Proteins and Amino Acids

On the 16 pages of this booklet will be found a listing of the essential and nonessential amino acids, structural formulas, a discussion of the manner of balancing, and a table of amino acid composition of some common dog foods. It is concise and practical introduction to amino acids and their value.—[*A Professional Handbook of Amino Acids and Proteins. Prepared by the Research and Technical Division, Wilson and Company, Chicago 9, Ill.* 1949. *Free.*]

Bovine Mastitis

Treatment with penicillin was found more effective in mild cases of short duration than in well-advanced infections. Adequate diagnostic procedures, improved milking and management practices, and udder infusions with penicillin reduced the incidence of mastitis from 55 per cent to 31.2 per cent during a two-year program. Eight cows continued to show mastitis symptoms throughout the trial, and 15 cows with extensively damaged udders were culled.—[*Bovine Mastitis: Treatment with Penicillin and Herd Practices which Aid in its Control. By A. B. Hoerlein, G. S. Harshfield, D. F. Brezeale, P. L. Kelly, and Emery Bartle. Bulletin 392, South Dakota Agricultural Station, Brookings, S. Dak. 23 pages. June,* 1948.]

Fluorosis in Animals

Fluorosis of animals has been reported from many parts of the world. Velu described the condition in sheep and cattle in Algiers from drinking water which passed over phosphatic strata containing fluorides. Peirce reported it in sheep in Australia; Seddon in Queensland; Du Toit in South Africa. Also, fluorosis has been recognized near aluminum factories in Norway, Switzerland, Italy, and the United States, and near a brickyard in England. The results found in naturally-occurring cases can be reproduced experimentally, and often result from feeding rock phosphate (containing fluorides) as a mineral supplement.

Symptoms include a wide variation of dental and bone lesions. In the incisor teeth there may be mottling of the enamel, delayed eruption, deformity, fragility, and poor wearing qualities. The cheek teeth also show uneven wear.

The usual bone lesions are osteomalacia, artificial swellings of the metacarpus and metatarsus, a peculiar chalky-white appearance, with osteosclerosis, great fragility, and a tendency to fracture easily. The latter is particularly noticeable in the ribs.

This combination of dental and bone lesions leads to poor trituration of the roughage, progressive emaciation, and, linked with painful joints and the

consequent restricted movement over pasture, results in rapid loss of milk, loss of flesh, general debility, extreme emaciation, and death.

The fluorine seems to be particularly toxic to growing animals, and during the period of eruption of the permanent teeth. If the permanent teeth are fully erupted, the animal is able to withstand a much heavier intake of fluorine for a longer time than when the teeth are erupting. Fluorine poisoning has been reported from drinking water containing 12 p.p.m.; from eating rock phosphate up to 3.5 per cent fluorine; and from grazing when the smoke from an aluminum smelter is blown over the pasture frequently or continuously.—[*Industrial Fluorosis. A Report to the Fluorosis Committee. Medical Research Council Memorandum No. 22. Paper. 132 pages. His Majesty's Stationery Office, London, WC 2, York House, Kingsway, 1949. Price 4 s.*]

Animal Sanitation

According to the preface, "This book is for the teacher, the student, the sanitarian, and for all those interested in conserving livestock health." It is divided into 52 chapters which are arranged in 11 parts. Throughout, the discussion purposely avoids the matter of treatment. Instead, it emphasizes the value of skilled veterinary medical service and the role that the veterinarian has played and is playing in conserving the multibillion dollar livestock industry.

Among the animal health factors discussed are many phases of anatomy and physiology, nutrition, housing, and hygienic surroundings. Many diseases and ailments are discussed on the basis of their relation to the preceding chapters, the prevention of spread, the handling of infectious and parasitic diseases, and an assortment of miscellaneous conditions and problems.

A book to keep in the waiting room for perusal by clients, and to recommend to clients for home reading. It could well serve as the basic text for high school and adult classes in the care of animals in a manner which would reduce diseases to a minimum.—[*Animal Sanitation and Disease Control. By R. R. Dykstra, Kansas State College. 3rd ed. Cloth. 808 pages. Illustrated. The Interstate, Danville, Ill.*, 1949.]

Biological Warfare

Biological warfare is untried and unproved, and its potentialities are unknown. Careful, rational consideration of the best information and knowledge available on the subject justifies the belief that the possibilities of biological warfare cannot be ignored. However, some of its potentialities have been grossly exaggerated.

Should biological warfare be utilized, the livestock of the nation provide a much better target than the human population. This would place great responsibility on the veterinarian. The best way to meet that responsibility is to keep informed regarding the manifestations of diseases which can be spread by "test-tube" warfare, or of exotic diseases not common to the practice community, and of diseases newly reported in the veterinary medical literature.

The best way to combat this type of disease is exactly the same as in all other diseases: Make a careful differential diagnosis; be open-minded when unusual symptoms are seen; and be prompt to call in consultation when conditions seem to warrant.—[*R. A. Kelser: Biological Warfare Considerations Which may be of Interest to Veterinarians. Vet. Ext. Quarterly, No. 115, University of Pennsylvania, Philadelphia* (1949) :50-59.]

Modern Dog Encyclopedia

Detailed descriptions of breeds officially recognized by the American Kennel Club occupy 337 of the 626 pages. Other major sections deal with the history of the dog as man's ally, in sport, and proper training and handling.

The treatises on anatomy, physiology, common diseases, first aid, nursing, breeding, nutrition, and psychology are in keeping with the most up-to-date information. Dr. Leon F. Whitney is a listed contributor to the sections dealing with diseases, first aid, and breeding, and Dr. Todd O. Munson is identified with the section on feeding.

It is difficult to meet the demands of publishers and the reading public, while still adhering to professional standards, in writing on disease problems for this type of publication. This book is a satisfactory compromise, with these principal exceptions:

1) Most veterinarians will object to the open-and-shut advice on home treatments for parasites, especially since no mention is made of the importance of laboratory diagnosis.

2) The advice on first aid for poisoning overlooks the fact that after emergency antidotal treatment has been given by the owner, further treatment by a veterinarian may be advisable, including palliative therapy to ease the dog's suffering.

3) A dog suspected of having a foreign body in the mouth may, instead, have rabies. Therefore, advising owners to open the mouth and look inside when a dog is strangling, is risky when not prefaced with a suitable warning.

4) For humane reasons, and to permit proper restraint, a dog badly peppered with porcupine quills should be anesthetized before removal of the quills is attempted, although no mention was made of that.

Misspellings of sulfaguanidine, rotenone, and lentin suggest the need for more careful editing of technical terms, and frequent switching from "his" to "its" in referring to the same animal is disturbing.—[*The Modern Dog Encyclopedia. Edited by Henry P. Davis. Cloth. 626 pages, 8½ in. x 11 in. Well-illustrated. Stackpole and Heck, Inc., New York 18, N. Y. 1949. Price* $10.00]

THE NEWS

Eighty-Seventh Annual Convention
Miami Beach—August 21-24, 1950
Start Planning Now to Attend

August 21-24, 1950—Jot down these dates and start making your plans to be in Miami Beach then, for the eighty-seventh annual meeting of the AVMA.

Headquarters will be the new, air-conditioned municipal auditorium. Now under construction and scheduled to be completed soon, this auditorium is designed for the comfortable accommodation of large conventions.

Notwithstanding that Miami Beach has been popularized as a winter resort, in recent years it also has become widely favored as a summer vacation spot—so much so that the city's hotels do a thriving business throughout the summer. The Convention Bureau has given assurance, however, that there will be ample and excellent housing accommodations for all AVMA visitors. To facilitate reservations, the hotels and housing subcommittee of the Committee on Local Arrangements is now arranging to have blocks of rooms in various hotels set aside for the convention. The choice is being made from among the 332 hotels in Miami Beach, with particular attention to nearness to the municipal auditorium. In general, summer rates for even the most luxurious rooms are lower than those for mediocre accommodations in other convention cities.

Dates for the meeting and selection of the local committee were announced at the midyear Executive Board session in Chicago, Nov. 27-28, 1949. Plans also were discussed for official convention tours originating at several key locations in the United States. One of the proposed tours is a boat trip down the Atlantic Coast from New York City.

Following is the organization of the Local Committee.

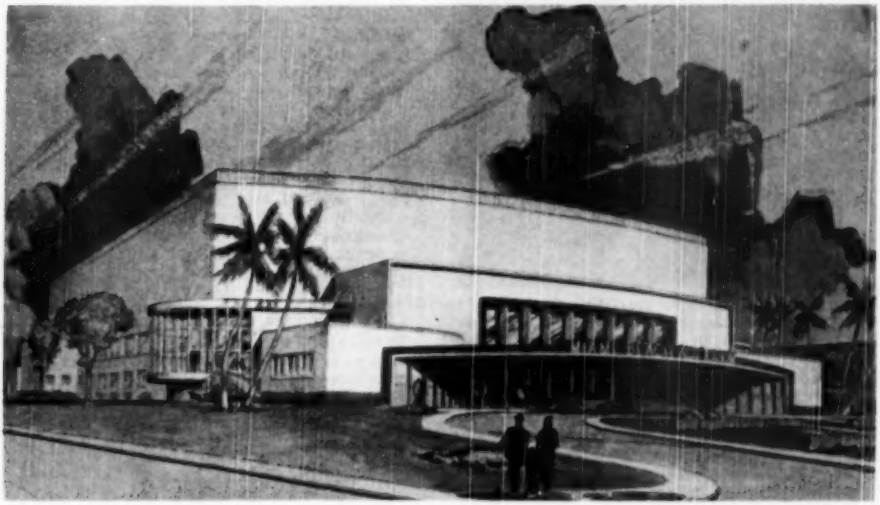
Committee on Local Arrangements

OFFICERS

General Chairman.—Dr. E. B. Clawson, 2418 N. Miami Ave, Miami 37.

Vice-General Chairman.—Dr. Robert P. Knowles, 2934 N.W. 17th St., Miami 37.

General Secretary.—Dr. M. B. Teigland, 2635 N.W. 36th St., Miami 37.



—Miami Beach News Bureau

Architect's drawing of the new air-conditioned municipal auditorium in Miami Beach, which will afford comfortable facilities for the AVMA convention to be held there August 21-24, 1950.

COMMITTEE CHAIRMEN

Entertainment—Dr. J. H. Yarborough, 2635 N.W. 36th St., Miami 37.

Exhibits—Dr. C. E. Dee, 26 N.W. 96th St., Miami 38.

Hotels and Housing—Dr. S. C. Wasman, 1929 Purdy Ave., Miami Beach.

Meeting Rooms and Equipment—Dr. Jack O. Knowles, 2936 N.W. 17th St., Miami 37.

Public Relations and Publicity—Dr. S. C. Wasman, 1929 Purdy Ave., Miami Beach.

Reception and Hospitality—Dr. C. E. Bild, *co-chairman*, Box 515, Little River Station, Miami 38; Dr. D. A. Sanders, *co-chairman*, Florida Agricultural Experiment Station, Gainesville.

Registration and Information—Dr. V L. Bruns, Box 623, Williston.

Women's Activities—Mrs. C. E. Bild, Box 515, Little River Station, Miami 38.

Later issues of the JOURNAL will give detailed information about hotel reservations, tour plans, program features, and other convention arrangements.

Canadian Association Organized

The Canadian Veterinary Medical Association was authorized under a law passed by the Canadian Parliament on June 30, 1948. The final organization was completed, and the first annual meeting was held Sept. 21-23, 1949, at Winnipeg (*see* JOURNAL, Nov., 1949, p. 392, for program).

Dr. J. A. Charlton, Member of Parliament, presented the charter to the newly elected president in these words:

Dr. J. A. Charlton, M.P., presenting the charter to the Canadian Veterinary Medical Association president, Dr. E. F. Johnston.

> This Convention has been called for the purpose of amending or adopting the by-laws and rules to govern and manage the Association as provided for in Section 7 and 8 of an Act to incorporate the Canadian Veterinary Medical Association (11-12 George VI chapter 87 assented to the 30th of June, 1948).
>
> The authority under which the officers of this Association will act and govern the affairs may be termed the Charter of the Association. It comprises the Act, the acceptance of the agreement to form the Association signed by representatives of the various provincial associations, the letter of the clerk of the Privy Council transmitting the Act after its passage through the Senate, the House of Commons and, finally, the royal assent.
>
> These documents have been duly assembled and bound together in this volume to form a complete authority for our future actions and are in fact the Charter of the Canadian Veterinary Medical Association.
>
> In passing over this important Charter to the care of the president of the Association, it may be emphasized that it is an original series of documents which cannot be duplicated and consequently it is urged that the greatest care be exercised for its safety against fire or loss, and it must be held in safe keeping at all times.
>
> The Charter is a document which marks a very definite period of history in so far as Canadian veterinarians are concerned. With its authority and by careful action, the Association has the power to produce a very highly organized body which can enhance veterinary science, veterinary education and ethics. This will enable the Association to be one of the most useful for the welfare of our country, as it is intimately connected with the animals which are a basic part of our most important industry.
>
> But to obtain to the full the potential benefits which are possible, it is necessary that all veterinarians contribute their part and assure their coöperation and support. This is absolutely necessary so that the Association can and does speak for the united profession.
>
> These results will not come without effort. All of you know the early efforts to form an association. Individual veterinarians speaking at meetings, articles written in the journals, the organized effort made in 1921 when some 34 prominent veterinarians assembled in Ottawa under the auspices of the Department of Agriculture, and again the abortive attempt in 1923 to form an Association before getting a legal standing and, then, finally the recent concerted effort by the western associations which activated the present movement now crowned with success.
>
> We have at last succeeded in providing the authority under which our progress may be practically unlimited. I would like to add here a personal word of tribute to the three men, in the persons of Dr. E. F. Johnston, Dr. L A. Gendreau, and Dr. Orlan Hall, who have put forth a great deal of effort and much time in order that this were possible. But I would reiterate that the continued success of this organization depends upon the active support of the members and the willingness of all to work toward these ends.
>
> In the advancement of civilization, science, and progress, we must first set our own house in order; after that there is no limit to the possibilities of our influence for good in the world.
>
> It is indeed a great honor for me to have the privilege of presenting this Charter to you Mr. President for the Association. May it be the means whereby the status of our profession is

enhanced and, in turn, that the profession may work for the benefit of the animal kingdom, the public good, and the welfare of our country.

AVMA President C. P. Zepp, Sr., presented a gavel to President E. F. Johnston of the newly formed association, and commented as follows:

I have been assigned an interesting and agreeable duty, namely, the presentation of a gavel for the use of the president of the Canadian Veterinary Medical Association.

The gavel, an interesting and historic one, was originally presented to Dr. A. E. Cameron who was acting as provisional chairman of a body of representatives of various provincial veterinary associations, which were meeting to deliberate on the formation of a Dominion association.

The wood from which the gavel is made has a particular significance for Canadian graduates. The shaft is made from a piece of wood which was part of the old Ontario Veterinary College, Temperance Street, Toronto. The hands of Drs. Andrew Smith, Bovell, Thorburn, and other pioneer teachers have passed over its surface. The head is made from the banister of the Montreal Veterinary College. Over its surface have passed the hands of Drs. Duncan McEachern, William Osler, Orphyr Bruneau, and V. T. Daubigny, pioneer workers in the field of veterinary medicine of both English-speaking and French-speaking sections.

The gavel was presented by Drs. Chas. A. Mitchell and Ronald Gwatkin, well known to all of you. Their words accompanying the gavel were:

By association it can be said that, indirectly, these pioneers of Canadian veterinary science will be with you to-night, and in the years to come, through this gavel, will be a part of any Dominion organization that may be formed. It is hoped that your deliberations will be successful in bringing into existance a Dominion Council of Veterinary Medicine which will unite the various sections of veterinary science in Canada as this gavel figuratively unites us with the pioneers of the past.

A silver inscription has been placed on the gavel—"Historic Gavel—Canadian Veterinary Medical Association." It is herewith handed over to the Association for the use of successive presidents and may it bring the Association and all who join in its deliberations inspiration and success.

The constitution of the new association lists 12 objectives, of which four may be singled out for special mention: (a) to cultivate and advance the art and science of veterinary medicine and surgery and to maintain the honor and interests of the veterinary profession; (e) to enlighten and direct public opinion in relation to surgical and medical veterinary science and to promote the public health in connection with such science; (g) to establish an examining board to examine candidates for admission to the veterinary profession and to grant certificates of qualification; (h) to establish qualifications in veterinary science so that the holders thereof shall be acceptable and privileged to practice in any of the provinces of Canada or throughout the whole of Canada, subject only to the provisions of registration in any of the provincial associations.

Three types of membership are provided: ordinary, with annual dues of $5.00; constituent, for provincial associations; and life, upon payment of $100.00.

The governing and administrative body is called

Dr. C. P. Zepp, Sr., AVMA president, handing the historic gavel to Dr. E. F. Johnston, president of the Canadian Veterinary Medical Association.

the Canadian Veterinary Medical Council, and consists of one member from each provincial or constituent association, one member from each veterinary science faculty in Canada, the officers (president, vice-president, and secretary-treasurer), an eastern representative, and a western representative. The last five persons named constitute the Board of Directors.

The Association plans to provide a program for the integration of membership between the provincial and the Canadian associations. More than half of the veterinarians in Canada already have joined the new Association, and it is hoped that all will do so.

Honorary Members

Letters have been received from the honorary members elected at Detroit, and are hereby passed along to all members.

George W. Stiles, M.D., director of the laboratory section, Colorado Department of Public Health, writes:

The honorary membership conferred upon me by the American Veterinary Medical Association on July 10, 1949, is accepted with deep humility and appreciation.

During my many years of activity in the Federal BAI, contacts with members of the veterinary profession are among the richest years of my medical experience.

The two branches of medicine are now working in closer harmony than ever before to advance the cause of public health and human wel-

fare, and I am happy to share in this line of duty to my fellow-men.

Albert Hjärre, D.V.M., professor at the State Veterinary Medical Institute, Stockholm, Sweden, says:

> It is a very great pleasure to receive the certificate attesting to my honorary membership in the American Veterinary Medical Association. To me, this is an extraordinarily great mark of honor for which I herewith ask you to forward to the AVMA my sincere and respectful thanks.
>
> The extremely important contributions to the progress of the veterinary profession achieved by the AVMA are well-known in Sweden, as they are in other countries. During my tour in the United States in 1947, I had the opportunity to get to know, at closer quarters, the excellent organization of the AVMA and to see the results of the splendid and successful work carried out by the Association. I am convinced of the fact that the AVMA is one of the most powerful and effective veterinary organizations in the world.

European Tour Highlights—14th International Veterinary Congress

England

Mrs. Schlotthauer and I took two side trips that were not included in the tour. Arranged by Dr. J. Hickman, director of the Equine Research Station, Newmarket, who was our guide, one trip took us to Canterbury and the other to Cambridge and Newmarket. In Canterbury, the old city wall and its gates still stand as they have for centuries, but the city has grown far beyond the walls. We first visited the Canterbury Cathedral with its beautiful spires, arches, and stained glass windows. The cathedral is an intimate part of England, as many of her noted people lie buried there. It stands as a monument to the past and an inspiration for the future. Many of the shops were in buildings nearly as old as the ancient West Gate. The old Kings School Book Shop is one of the prominent buildings of this group, its upper floors extending out over the lower portion of the building.

Fordwick is the ancient port of Canterbury, and the present mayor, who has held the office for approximately forty years, is Dr. Hickman's uncle. From Fordwick, we drove to the home of Dr. Hickman's parents where we had tea. Mr. and Mrs. Hickman live in a charming old red brick house surrounded by spacious lawns and gardens. The vegetable garden was arranged in small plots each of which was surrounded by a living fence of fruit trees espaliered on wires. It produced an interesting and beautiful effect. Mr. Hickman, a sheep breeder of note, has developed many prize-winning sheep, some of which go to Canada and some possibly may be sent to Texas this fall. The Hickmans are most gracious hosts and their home is the kind of a place we all dream about retiring to.

The countryside between London and Canterbury is beautiful, much like parts of New England. The cultivated crops are chiefly small grains and potatoes. We saw orchards of apples and pears growing in great abundance. The fruit looked very good. We observed both sheep and cattle grazing in the pastures. Sheep raising, however, seemed to be the principal livestock industry in this area. The crops in general were good despite the fact that England was experiencing the most severe drought in many years.

The buildings in the villages and on the farms are mostly of brick or stone construction, with slate or tile roofs. Many are very old, but nearly all are in excellent condition. The farm buildings appeared better generally than those seen on farms in America, and in no instance did we see discarded farm equipment and other junk in the farmyard. This thriftiness is general throughout Europe. The people in Europe are less wasteful in this regard than we in America.

On Sunday, August 14, Mrs. Schlotthauer and I boarded an early train for Cambridge, where we were met by Dr. Hickman, who after showing us Cambridge drove us to Newmarket.

Cambridge is chiefly a university city. The buildings of the colleges in all instances are arranged around a courtyard. From Cambridge we drove to Newmarket, the Lexington (Ky.) of England. Newmarket is the center of horse-breeding in England, and it is here that the Equine Research Station of the Animal Health Trust is situated. The rolling countryside is much like that around Lexington. One sees pastures, paddocks, woodlots, and beautiful country estates. The presence of jumps and hurdles in many of the open fields suggested a keen interest in running and jumping horses.

The Equine Research Station has excellent facilities. Its stables and paddocks are satisfactory for immediate use and its laboratories are being developed. A canine research station is being developed at Lanwades Park, a short distance from the equine station. Some of the staff from both stations will reside in the mansion at Lanwades Park, which is a large brick structure with many rooms, a tower, spacious lawns, and a walled-in garden. Dr. Hickman and his family also reside in this mansion. They too, are delightful, gracious hosts and we look forward to seeing them again.

After visiting the Equine Research Station and Lanwades Park, I feel certain that under the capable guidance of Dr. Hickman, all research at these stations will be of the highest quality.—*Dr. Carl F. Schlotthauer, Mayo Foundation, Rochester, Minn.*

Holland and England

One afternoon of leisure in London, I went to St. Paul's Cathedral and the surrounding area, which was bombed extensively and heavily during 1940-1941, exposing a medieval Roman wall which it is reported the English never knew was there. An old English professor of anthropology rode up on his bicycle with two small spades and asked if

I would be interested in "excavating" around and under the old wall. I answered yes and threw off my coat. By taking advantage of an old basement, we were able to get down around 30 feet. After digging some forty minutes, we recovered some old Roman pottery, a few human metatarsal bones, and boar tusks and teeth. I hope to mount these 2,000-year old specimens in a plastic ash tray I am making.

I noted with interest several London teamsters "dead anchoring" their horses at each delivery stop with heavy lead weights, and also chaining and locking the back wheels of the wagons. Upon inquiry, the drivers invariably told me that these animals had gone through many bombings and were still jittery at times, and might start running at the sound of any unusual noise. Some said that the concussion from the bomb bursts was so great that it caused extensive anal prolapse.

As golfing is my main hobby, I had the privilege of playing on two British courses considered the oldest in the world. Making it more exciting, I brought these native English (plus-fours wearers) in on the last hole one down.

Since boyhood, I have always wanted to saunter through Westminster Abbey in a leisurely manner, so on the afternoon of the last day of the Congress, I experienced this awe-inspiring saunter. (The Abbey is on the street just east of Central Hall where the Congress was held.)

I cannot pass up the opportunity to mention that the English certainly live up to their reputation of being the most courteous, obliging, and polite people in the world. The bobbies, the bus conductors, the cabbies, and the man in the street were most attentive to any and all requests. Would that we Americans were half as courteous, friendly, and obliging to strangers in our midst!

All trips have humorous incidents and I'll mention just a few we had in foreign hotels. The electrical switches, buttons, etc. are very crude and numerous. The plumbing is decidedly inferior to ours, naturally, as the buildings are all much older than ours. The Hotel DeParee in Paris had the strangest and most numerous gadgets; for instance, different colored buttons for different services. I refrained from pushing any of these strange-looking buttons on the walls and bedside stands, but did pull a long chain while in the bath tub, hoping and expecting more light in the room. Instead, lo and behold, in rushed a French chambermaid, excitedly gesticulating, with a back-scrubbing brush in her hand.

In the Low Countries, many dairymen use portable mechanical milkers, and the cows are milked in the grazing fields instead of barns.

A rigid postmortem examination, required by law, is made of all animals dying while under the care of a licensed veterinarian. A veterinarian's treatment may not be successful, but if he desires to retain his license to practice, he can't miss on his diagnosis too many times.

I shall not forget the Roman feast tendered us by the French veterinarians and their wives at Alfort Veterinary College in the suburbs of Paris. Virtually stuffed and overfed at that feast, a member of our party thanked one of the French veterinarians for the hospitality. Suddenly, the Frenchman shrugged his shoulders and answered: "Don't thank us for this; thank your congressmen

Council on Education

The AVMA Council on Education met in Chicago on November 27, 1949. They are shown here at their all-day meeting at the Palmer House on that date (left to right)—Drs. C. C. Hastings, Williamsville, Ill.; Garth A. Edge, Toronto; W. A. Aitken, Merrill, Iowa; S. W. Haigler, St. Louis; M. S. Shahan, Washington, D.C.; James Farquharson, Fort Collins, Colo.; W. L. Boyd, St. Paul; W. A. Hagan, Ithaca, N.Y. Colonel Seth C. Dildine, Canal Winchester, Ohio, was the only member unable to be present at the meeting.

for passing the Marshall plan." In this case, I felt we really got something tangible for our tax money.—*Dr. E. H. Haynie, Kansas City, Mo.*

GERMANY AND SWITZERLAND

The trip across the Atlantic on the S.S. "Queen Elizabeth" was very pleasant and the sea was mild most of the time. I am sorry that I can not say the same for the North Sea, as dramamine and other gastric sedatives seemed to have little value. The waves after six in the evening reached heights of 30 ft. and, this being a smaller vessel, the ship pitched quite a bit.

The veterinary colleges that we visited gave us a royal welcome, and we were wined and dined at most of the schools. The champagne dinner at Alfort was outstanding, and the next night they again had a farewell champagne hour at the Paris Veterinary Medical Association which was impressive and greatly appreciated by our delegation.

In visiting the Scandinavian countries, we were surprised to find that they do not use screens of any kind, as they have no flies. They have a regulation in these countries that all waste materials must be disposed of immediately.

While touring through Germany, the train stopped at Bremen, and a number of our party got off to purchase some bananas in the depot. Without any warning, the train started, and everyone rushed to get on, but after awhile we found that Dr. and Mrs. Carl F. Schlotthauer were not on board. Everyone became excited and anxious as this was a military zone in the British area. The conductor informed us that another train would leave in ten minutes, and that we would wait in Hamburg, the next stop. Fifteen minutes after we arrived in Hamburg, the next train came in from Bremen and you can not imagine the welcome that was accorded Dr. and Mrs. Schlotthauer when they got off of the second train.

In Lucerne, Switzerland, we visited the Deubblin and Weidemann Beer Stubes, where Johann Wagner, the composer, came nightly to meet his friends and have a bite to eat, and drink old lager. The table tops of the Weidemann Stube had been carved with the names of the honor students, who had attended the University, for the past 700 years. The atmosphere of the past added a romantic touch to these places. All the hotels had string orchestras for the evening meals, and everyone was gay and contented. There is very little unemployment in Switzerland, and the country is clean and beautiful.

Certain ones in our group could speak German, French, and Swedish which made traveling convenient in the different countries.

Those who came home by plane had dinner in London, supper in Shannon, Ireland, breakfast in Gander, Nova Scotia, and dinner in New York—all within a period of eighteen hours.

It was indeed a pleasure, and a privilege we shall always cherish, to have made the tour with such a congenial group.—*Dr. C. A. Pleuger, Cincinnati, Ohio.*

A GLANCE AT HORSES AND RACETRACKS

I did not take the AVMA tour but toured Europe "on my own" after the Congress. Being a racehorse man, I naturally sought and searched for the racetrack veterinarians of the European countries. I believe my keenest enjoyment on the tour was attending the races at Brighton in England, the Curragh in Ireland, and Deauxville in France. I had the pleasure of seeing some of the finest European Thoroughbreds, some of which I inspected for American interests for possible purchase. I believe they have since been bought by these U.S. interests, and will be shipped to America.

I was keenly interested in the differences between racing in the United States and Europe. The European horses race in the opposite direction from our horses over a turf, whereas our races are on dirt loam. We see, for the major part, ankle and foot trouble in our racehorses, whereas they have mostly knee and tendon trouble.

The French and Italian Rivieras were two other high-spots. I don't believe I have ever seen a seaside resort as beautiful as Cannes. The water was warm, the food was good, the wine excellent, and the women are like no others I have ever seen or been acquainted with at any time.

I would certainly recommend a European trip for everyone. One does not really understand the Europeans and their problems until one has traveled among them and talked to them.—*Dr. A. H. Edmondson, Pasadena, Calif.*

Are You Moving?

Notify the AVMA office of change of address before the 15th of the month; otherwise your succeeding Journal will not be delivered. The Journal is not forwardable under the mailing regulations.

Ralston Purina Research Fellowships

Beginning with the 1949-1950 school year, the Ralston Purina Company inaugurated a program of research fellowship awards to assist in the training of additional personnel for furthering the interests of agriculture, particularly the livestock and poultry industries. The awards ($1,440 annually) will be offered again for the 1950-1951 school year, in the fields of (1) nutrition and physiology research as applied to dairy, poultry, and animal husbandry; and (2) research in transmissible diseases of livestock and poultry.

Any individual qualified for graduate study in any land-grant agricultural college or approved veterinary college (including Canadian colleges)

who has desirable personal qualifications and submits a completed application is eligible. The fellowships are awarded on an annual basis; the recipient is eligible for reappointment not to exceed a tenure of three years, and not more than seven fellowships shall be awarded annually.

Members of the award committee are Drs. R. M. Bethke, Ohio Agricultural Experiment Station, representing the Poultry Science Association; M. A. Emmerson, Iowa State College, representing the AVMA; K. L. Turk, Cornell University, representing the American Dairy Science Association; W. M. Beeson, Purdue University, representing the American Society of Animal Production; and C. A. Elvehjem, Wisconsin College of Agriculture, representing the Association of Land-Grant Colleges. At the expiration of the term of each organization's representative, that organization will make succeeding appointments for periods of three years.

Application blanks may be obtained from the Ralston Purina Research Awards Committee, c/o Mr. J. D. Sykes, Ralston Purina Company, St. Louis 2, Mo.

STUDENT CHAPTER ACTIVITIES

Missouri Chapter.—The Veterinary Club of the University of Missouri has scheduled meetings for the second Monday night of each month. At the October 10 meeting, Dr. A. H. Groth spoke on "Opportunities and New Fields in Veterinary Medicine." Dr. Groth, who served as director of the regional laboratory at Auburn, Ala., has been appointed director of the College of Veterinary Medicine at the University of Missouri.

s/L. L. RICE, *Secretary.*

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Ohio Chapter.—Approximately 400 veterinary and preveterinary students and their wives attended the meeting of the Ohio State College Student Chapter of the AVMA on Oct. 12, 1949, to hear President C. P. Zepp, Sr., President-Elect W. M. Coffee, and Chairman of the Board of Governors W. G. Brock discuss the conduct of veterinarians beginning practice and tell of interesting highlights and problems encountered in their personal practices. Drs. J. G. Hardenbergh and R. C. Klussendorf, executive secretary and assistant executive secretary, respectively, also attended the meeting. Dean W. R. Krill introduced the guests and welcomed the incoming freshmen. Refreshments were served after the meeting.

It is the policy of the Chapter to encourage attendance at meetings of anyone interested in veterinary medicine, student or otherwise. Many wives of veterinary and preveterinary students attend and, although they do not participate in the meeting, they acquire some knowledge of the profession and become conscious of the importance of organized veterinary medicine.

Chapter officers are Robert L. Schubert, president; Hal R. Deal, president-elect; George R. Anderson, vice-president; Joseph W. Ralston, secretary; Paul A. Didion, treasurer; Henry J. Hofacker, chairman of program committee, Norman Sax, publicity chairman. Class representatives are Jack H. Gregg, senior; Darwin W. Smith, junior; James G. Ryder, sophomore; and John L. Anderson, freshman.

—*Ohio State University*

Left to right—Drs. R. C. Klussendorf, J. G. Hardenbergh, Mr. Robert L. Schubert, Drs. W. G. Brock, W. M. Coffee, C. P. Zepp, Sr., and Walter R. Krill.

All classes, except the clinic, were closed Jan. 4-6, 1950, so students could attend the meeting of the state association. This is to stimulate interest in organized veterinary medicine and to supplement the educational background with the scientific papers presented.

J. Guthrie Blue, senior and chapter representative, reported on the national convention in Detroit, at an earlier meeting. It was decided at this meeting to include a nominal sum in any future budget to help defray expenses of delegates.

s/NORMAN SAX, *Publicity Chairman.*

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Washington Chapter.—At the regular meeting of the Washington State College Student Chapter of the AVMA, Jay Miller reported that the exhibit of the School of Veterinary Medicine on homecoming day had met with much interest from returning alumni and other students; Dr. Shaw, Department of Dairy Husbandry, spoke on "Relationship of the Dairy Industry to the Veterinary Medical profession"; and Dr. LaMar Gaw (WASH '44), president of the state association, spoke on "The Place of a Veterinarian in the Community."

WOMEN'S AUXILIARY

Junior Auxiliaries.—A very active part of the Women's Auxiliary to the AVMA are the junior auxiliaries. A junior auxiliary is an organization

of the wives of veterinary students in the accredited veterinary colleges for the purpose of (1) providing some social life for the young wives of our veterinary students, and (2) to prepare the young women to become better fitted to handle the problems they will meet as wives of veterinarians. These organizations work to make their members

Mrs. H. W. Ayers

better wives by bringing to their monthly or semi-monthly meetings speakers of authority on varied topics — homemaking, cultural subjects, and professional ethics. The enthusiasm and interest given by the wives to the junior auxiliaries is an inspiration to all who have worked with them.

Mrs. H. W. Ayers, 916 W. 40th St., Oklahoma City, Okla., as first vice-president of the women's auxiliary, sponsors these organizations.

s/Mrs. (V. H.) Florence Miller, *President.*

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Kentucky Auxiliary.—The Women's Auxiliary to the Kentucky Veterinary Medical Association met in the Lafayette Hotel, Lexington, on Dec. 7, 1949. After the business meeting, members enjoyed a Dutch luncheon and a motion picture.

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Milwaukee Auxiliary.—The regular monthly meeting of the Women's Auxiliary of the Milwaukee Veterinary Medical Association was held at the home of Mrs. K. G. Nicholson on Nov. 15, 1949. Miss Helen Griswold, guest speaker, presented a book review of "Golden Apples" by Eudora Welty.

s/Mrs. M. C. Klofanda, *Secretary.*

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Southern States Auxiliary.—The annual meeting of the Southern States Veterinary Medical Association Auxiliary was held in Birmingham, Ala., Nov. 9, 1949, with the president, Mrs. Chas. C. Rife of Atlanta, Ga., presiding.

Minutes of the 1948 meeting held in Richmond, Va., were read by the secretary, Mrs. Taylor P. Rowe, Richmond.

The new constitution and by-laws were adopted. A report from each southern state concerning the state auxiliaries was read by a state representative.

Mrs. Dennis Coughlin, Knoxville, Tenn., president-elect of the AVMA auxiliary, brought greetings and a message from that organization.

The following officers were elected to serve 1949-1950: Mrs. Taylor P. Rowe, Richmond, Va., president; Mrs. C. D. Hobart, Athens, Ga., president-elect; Mrs. J. P. Carney, Meridian, Miss., first vice-president; Mrs. T. J. Stearns, Louisville, Ky., second vice-president; Mrs. Bruce Statton, Rocky Mount, N. Car., secretary-treasurer.

A lovely breakfast on November 9 was given the auxiliary by the Alabama Association and the Southern States Veterinary Medical Association.

s/Mrs. Bruce Statton, *Secretary.*

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X.

New Rules And New Forms For Membership Applications

Amendments to the Constitution and Administrative By-Laws were adopted at the 1948 annual meeting for the purpose of integrating membership in constituent associations (state, provincial, territorial, and other associations affiliated with the AVMA) with AVMA membership. These amendments necessitate a change in the vouchers required for indorsement of membership applications and in the printed application form. In effect, the new rules are as follows:

APPLICATIONS FROM VETERINARIANS RESIDING WHERE THERE IS A CONSTITUENT ASSOCIATION.—Such applications shall contain the certification of the secretary of the constituent association in the state, province, or territory that the applicant is a member in good standing of that association. This certification takes the place of the signatures of the two vouchers formerly required for indorsement of an applicant.

APPLICATIONS FROM VETERINARIANS RESIDING WHERE THERE IS NO CONSTITUENT ASSOCIATION.—Such applications shall contain the indorsement of two AVMA members who know the applicant, one or preferably both of whom reside in the same country as the applicant. This method applies to veterinarians residing outside the United States, Canada, Cuba, Puerto Rico, and Canal Zone.

APPLICANTS FROM JUNIOR CHAPTERS.—Junior members in good standing in their student chapters for not less than two years may be admitted without payment of the membership (initiation) fee, provided applications are filed within thirty days of graduation. Such applications must contain the indorsement of two members. To retain membership, such applicants must, within three years following graduation, join a constituent association, assuming that they are going to locate and reside where there is such an affiliated association. (A By-Law amendment to this effect was proposed at the 1949 annual meeting for action at 1950 session. In the meantime, applicants from junior chapters will continue to be admitted as formerly.)

New application forms have been printed containing the two types of certification described above and are available from the AVMA office. There are undoubtedly a number of the old forms still in circulation. Beginning with applications to be listed in the January, 1950, JOURNAL, the new method of certification will be put into effect.

First Listing

Haggard, C. H.
Luverne, Minn.
D.V.M., Iowa State College, 1914.
Voucher: H. C. Kernkamp.

SIEGMUND, OTTO H.
Camp Detrick, Frederick, Md.
D.V.M., Michigan State College, 1944.
Vouchers: B. Bisgeier and O. L. Smith.
STANFORD, MALCOLM F.
Rt. 2, Fayetteville, Ark.
D.V.M., Arkansas Veterinary College, 1920.
Voucher: T. D. Hendrickson.

Second Listing

BYRD, EDGAR H.
Box 211, Francesville, Ind.
CHAMBERS, JOHN W., JR.
Garland, Utah.
FLAHERTY, ROBERT C.
Easton, Md.
GRAY, JOHN S.
35 High St., Newton, N.J.
HETHERINGTON, JOHN L.
403 S. College Ave., Bloomington, Ind.
JACOBY, SUSANNE
Rt. 1, 187-A, South Haven, Mich.
KETOVER, NORMAN
c/o Dr. J. B. Skelton, Box 2, Post Rd., Riverside, Conn.
KINSEY, BILL H.
Washington Pk., Washington, N. Car.
McDANIEL, JOHN S.
420 Rutherford Ave., Trenton 8, N.J.
MORGAN, SAMUEL S.
6603 Florida Ave., Tampa, Fla.
TALBERT, M. G.
250 E. Madison St., Franklin, Ind.
TUFTS, SAMUEL R.
Jockey Hollow Rd., Morristown, N.J.
WATSON, EARL E.
Box 529, Route 1, Louisville, Ky.

1949 Graduate Applicants

First Listing

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Iowa State College

WILSON, SANFORD B., D.V.M.
St. Croix Falls, Wis.
Vouchers: J. B. Wilson, Sr., and J. B. Wilson, Jr.

Second Listing

Colorado A. & M. College

DEAN, EDWARD E., D.V.M.
2430 Olive St., Denver, Colo.

Iowa State College

GARVIN, ROBERT E., D.V.M.
Elk Point, S. Dak.
WITT, LA VERNE E., D.V.M.
Box 671, Sidney, Mont.

Michigan State College

LEVY, SOLOMON, D.V.M.
c/o Dr. George Levy, 121 E. Tremont, Bronx, N.Y.

U. S. GOVERNMENT

Laboratory Courses at Communicable Disease Center.—The 1950 schedule of laboratory training courses to be given by the Communicable Disease Center, Atlanta, Ga., follows. Information and applications should be requested from the Chief, Laboratory Division, Communicable Disease Center, 291 Peachtree St., N.E., Atlanta, Ga.

Schedule of Laboratory Training Courses
Jan. 1 — Dec. 31, 1950

Dates	Courses	Program & Location (No.)*
Jan. 9—13	Serological Diagnosis of Rickettsial Diseases	8.75-8
Feb. 13—24	Identification of Medically Important Arthropods	8.10-1
March 27—Apr. 14	Lab. Diagnosis of Parasitic Diseases. Part 1. Intestinal Parasites	8.00-1
Apr. 17—May 5	Lab. Diagnosis of Parasitic Diseases. Part 2. Blood Parasites	8.01-1
May 8—12	Lab. Diagnosis of Rabies	8.26-1
May 22—26	Lab. Diagnosis of Bacterial Diseases (Directors)	9.34-8
May 29—June 2	Lab. Diagnosis of Mycotic Diseases (Directors)	9.35-8
June 5—9	Lab. Diagnosis of Tuberculosis (Directors)	9.36-8
June 12—16	Lab. Diagnosis of Parasitic Diseases (Directors)	9.33-1
July 24—Aug. 4	Lab. Diagnosis of Mycotic Diseases. Part 1. Cutaneous and Subcutaneous Fungi	8.60-8
Aug. 7—17	Lab. Diagnosis of Mycotic Diseases. Part 2. Systemic Fungi	8.61-8
Aug. 21—Sept. 7	Lab. Diagnosis of Tuberculosis	8.55-8
Sept. 11—22	Lab. Diagnosis of Bacterial Diseases — General Bacteriology, Part 1.	8.40-8
Sept. 25—Oct. 6	Lab. Diagnosis of Bacterial Diseases — General Bacteriology, Part 2.	8.41-8
Oct. 9—13	Lab. Diagnosis of Enteric Diseases. Part 1. Introductory Enteric Bacteriology	8.50-8
Oct. 16—27	Lab. Diagnosis of Enteric Diseases. Part 2. Advanced Enteric Bacteriology	8.51-8
Sept. 18—Oct. 6	Lab. Diagnosis of Parasitic Diseases. Part 1. Intestinal Parasites	8.00-1
Oct. 9—27	Lab. Diagnosis of Parasitic Diseases. Part 2. Blood Parasites	8.01-1
Nov. 13—24	Identification of Medically Important Arthropods	8.10-1
Nov. 13—17	Virus Isolation and Identification Techniques	8.22-9
Nov. 20—24	Lab. Diagnosis of Influenza	8.25-9
Nov. 27—Dec. 1	Lab. Diagnosis of Rabies	8.26-9
By special arrangement	Lab. Diagnosis of Malaria	8.05-1
	Lab. Diagnosis of Virus Diseases	8.20-9
	Phage Typing of Salmonella Typhosa	8.52-8

*Refer to system of code numbers of laboratory training programs and locations of training laboratories.

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Dr. Clarkson Appointed to Foot-and-Mouth Disease Commission.—Dr. M. R. Clarkson, chief of the inspection and quarantine division

of the U. S. Bureau of Animal Industry, has been named by Secretary of Agriculture Brannan to represent the United States on the Joint Mexican-United States Commission for the Eradication of Foot-and-Mouth Disease. Dr. Clarkson's appointment fills a veterinary vacancy created more than a year ago when Dr. M. S. Shahan was relieved as codirector of the Commission and assigned to head foot-and-mouth disease research scheduled to be carried on in the United States.

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Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S. Bureau of Animal Industry are reported as of Nov. 9, 1949, by Chief B. T. Simms.

TRANSFERS

Harold A. Barnes, from Mexico City, Mex., to Topeka, Kan.
Wilburn B. Cochran, from Mexico City, Mex., to Oklahoma City, Okla.
John B. Healy, from Mexico City, Mex., to Little Rock, Ark.
James S. Knox, from Jefferson City, Mo., to Mexico City, Mex.
Harold A. Krig, from Mexico City, Mex., to Topeka, Kan.
Rolla C. Sexauer, from Mexico City, Mex., to Boise, Idaho.
George T. Woodard, from Mexico City, Mex., to Little Rock, Ark.

RESIGNATIONS

Julius W. Amsiejus, Albuquerque, N. M.
S. Norman Aqua, St. Paul, Minn.
Alan J. Arthur, Ft. Worth, Texas.
Otto W. Beirsdorf, Moultrie, Ga.
Ralph C. Belding, East Lansing, Mich.
Paul P. Boriskie, Baton Rouge, La.
George E. Brightenbach, Trenton, N. J.
Wallace J. Butson, St. Paul, Minn.
Nathan Colbart, Cleveland, Ohio.
Rafael Cordero, Jackson, Miss.
Donald L. Croghan, Salt Lake City, Utah.
Richard H. Davis, Jr., Little Rock, Ark.
John W. Foley, Madison, Wis.
Aaron H. Groth, Auburn, Ala.
Scott Haggard, Ft. Worth, Texas.
James O. Heishman, Beltsville, Md.
Russell J. Henshaw, Lansing, Mich.
Robert M. Hollen, Des Moines, Iowa.
Mahlon R. Huffman, Mexico City, Mex.
Louis M. Kitsman, Los Angeles, Calif.
Arthur J. Knilans, Madison, Wis.
A. J. Mabry, Mexico City, Mex.
John A. McBee, Jacksonville, Fla.
Harold L. McCrillis, Des Moines, Iowa.
John A. McCrory, Lincoln, Neb.
Robert R. McManus, Mexico City, Mex.
Bronislaw Mendlowski, Chicago, Ill.
Byron R. Moore, Mexico City, Mex.
Miss Florence A. Muckel, Bismarck, N. Dak.
Thomas G. Murnane, Jr., Mexico City, Mex.
William A. Price, Mexico City, Mex.
Irwin Rothman, Newark, N. J.
Perry Stone, Mexico City, Mex.
Johim F. Wong, San Francisco, Calif.

RETIREMENTS

Arch W. Bennett, Seattle, Wash.
Arthur L. Blake, Waterloo, Iowa.
Charles A. Curtis, Albuquerque, N. M.
Howard A. Downey, Madison, Wis.
Carl A. Engelmann, Cincinnati, Ohio.
Henry N. Graefe, Indianapolis, Ind.
William G. Gregory, Ft. Worth, Texas.
Robert B. Grimes, Jefferson City, Mo.
Edgar Heiny, Denver, Colo.
Ray Hoefling, Cincinnati, Ohio.
Clarence P. Kellogg, Los Angeles, Calif.
Tives T. Maize, Jefferson City, Mo.
James M. Murdoch, Indianapolis, Ind.
Don I. Skidmore, Washington, D. C.
Benjamin H. Steiner, Piqua, Ohio.

DEATHS

George W. Famous, Boston, Mass.
Charles A. Greenig, Atlanta, Ga.
Arthur L. Wood, Des Moines, Iowa.

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Poultry and Rabbit Grading Regulations.—Secretary of Agriculture Brannan approved regulations governing the inspection and grading of poultry and domestic rabbits, effective Jan. 1, 1950, which will replace all current regulations and specifications for classes, standards, and grades for poultry and domestic rabbits, making one document of such regulations, rather than several as in the past.

The new regulations provide that the grading of ready-to-cook poultry, which has been processed according to specified minimum standards for sanitation facilities and operating procedures, need not be federally inspected for condition and wholsomeness to be officially graded by licensed graders of the USDA.

AMONG THE STATES AND PROVINCES

California

Bay Counties Association Officers.—The following officers have been elected to serve the Bay Counties Veterinary Medical Association for 1950: Drs. George E. Martin, San Jose, president; William W. Brimer, Alameda, vice-president; and Russell P. Cope, Berkeley, secretary. The association will continue to meet the second Tuesday of each month.

s/RUSSELL P. COPE, *Secretary.*

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Status of Bovine Tuberculosis.—Although California got off to a late start in the federal-state bovine tuberculosis-eradication program, nine years after the state program was started (Sept. 14, 1931, in Santa Cruz County), the entire state was designated a tuberculosis modified area by the U. S. Department of Agriculture. By Nov. 1, 1940, tuberculosis among California cattle had been reduced to

less than ½ of 1 per cent. During the campaign, as many as 35 per cent of the cattle in some counties and more than 20 per cent in many others were found infected. Reducing the incidence of tuberculosis on a statewide basis to less than ½ of 1 per cent in this comparatively short time is a remarkable achievement.

A schedule for testing all commercial dairy herds every two years, and infected herds repeatedly at short intervals, has been set as a safe minimum of testing under present conditions to maintain the favorable position which has existed since 1940.

s/A. K. CARR, *Chief, Division of Animal Industry, California Dept. of Agriculture.*

Hawaii

Hawaiian Association.—At the Nov. 5, 1949, meeting of the Hawaii Veterinary Medical Association at the Blue Cross Animal Hospital, Honolulu, Dr. Paul Gebauer (M.D.) discussed "Chest Surgery" (with illustrations).

Governor Stainback appointed the following members to the new Board of Veterinary Examiners: Drs. R. H. Morrison, Paul T. Nomura, and W. M. Pang of Oahu; J. M. Hendershot, Maui; and L. A. Weight, Hilo. At a subsequent meeting of the Board, Dr. R. H. Morrison was elected secretary-treasurer.

s/PAUL T. NOMURA, *Resident Secretary.*

Illinois

Chicago Association.—The Chicago Veterinary Medical Association met at the Palmer House on Nov. 8, 1949. Dr. Wayne Riser discussed "Pathologic Conditions of the Kidney" (with illustrations). Dr. Emil Hess, Zurich, Switzerland, was a visitor at this meeting.

s/ROBERT C. GLOVER, *Secretary.*

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Eastern Association.—The fall meeting of the Eastern Illinois Veterinary Medical Association was held at the Hotel Tilden Hall, Champaign, on Dec. 5, 1949. Dr. H. S. Bryan spoke on the "Ring Test," and Dr. Jesse Sampson discussed the International Veterinary Congress.

s/G. E. HUNT, *Secretary.*

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Cooked-Pork Safety Affirmed in Trichinosis Suit.—A human being cannot acquire trichinosis from eating adequately cooked pork, the first district appellate court ruled recently in the case of Nicketta *vs.* National Tea Company. In so doing, the court upheld the judgment of the circuit court of Cook County (Illinois), where the case was originally heard. The plaintiff sought damages on the grounds that she and her family had contracted trichinosis from eating fresh pork purchased at a National Tea store and allegedly cooked properly at home.

Reporting the case, *The National Provisioner* (July 30, 1949) cited the appellate court's pronouncement that nobody ever has been awarded damages "for allegedly contracting trichinosis from pork which has been properly cooked and that no one has ever offered to produce a scientist or doctor to testify that it is possible to acquire trichinosis from properly cooked pork."

Iowa

Cedar Valley Association.—On Nov. 14, 1949, 41 veterinarians from 17 counties attended the Cedar Valley Veterinary Association's dinner meeting in Black's Tea Room, Waterloo. Dr. John K. Dewar, Cherokee, discussed "Feeder Cattle Troubles." Dr. A. J. McIntosh, La Porte City, led the discussion and gave some informative case reports.

Dr. C. B. Strain of Dunkerton was reëlected delegate to the Advisory Committee of the Iowa Veterinary Medical Association.

s/F. B. YOUNG, *Secretary.*

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Fayette County Society.—There were 17 veterinarians from nine counties in attendance at the dinner meeting of the Fayette County Veterinary Medical Society at Pa and Ma's Tearoom, West Union, on Nov. 15, 1949. Dr. H. C. Smith, Sioux City, presented an illustrated lecture on "Studies in Immunity."

s/DONALD MOORE, *Secretary.*

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East Central Society.—Forty-one members, from 11 counties, of the East Central Iowa Veterinary Medical Society attended the Nov. 10, 1949, dinner meeting at the Hotel Roosevelt in Cedar Rapids. Mr. Norman J. Jacobson, associate professor, Division of Dairy Husbandry, Iowa State College, Ames, discussed "Winter Feeding of Dairy Cattle." Dr. Birk C. Lowther led the discussion which followed. The subjects of ketosis, overloading of feed and water, handling of beef calves, and feeding of beef calves after importation, calf scours, roughages, and silage were capably handled.

s/WAYNE H. THOMPSON, *Secretary.*

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Interstate Association Officers.—The new officers of the Interstate Veterinary Medical Association are Drs. J. O. Buck, Sioux Falls, S. Dak., president; F. O. Lundberg, Wausa, Neb., vice-president; E. G. Cole, Sioux City, Iowa, treasurer; and H. C. Smith, Sioux City, Iowa, secretary.

s/H. C. SMITH, *Secretary.*

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Joint Meeting of MSAA and AAHA. The twelfth annual meeting of the Midwest Small Animal Association and the regional meeting of the American Animal Hospital Association were held Nov. 15-16, 1949, in the Hotel Burlington, Burlington. The scientific program follows.

Dr. Robert L. Anderes, Kansas City, Mo.: "A Veterinarian's Liability to His Patients, Clients, and Employees." A round table dis-

cussion included problems on profit sharing for employees, form letters for collection of debts, employing an auditor, and liability insurance.

Mr. Tom Hanna, Des Moines: "Floor Care for an Animal Hospital" (with illustrations). Discussion following this talk included hospital personnel and hours, hospital schedule and routine, source of animal food, hospital-client relations, time-saving gadgets.

Dr. C. N. Bramer, Evanston, Ill.: "Drainage of the Ear Canal" (with illustrations).

Dr. A. R. Theobald, Cincinnati: "Removal of the Anal Sacs" (with illustrations).

Drs. Frank R. Booth, Elkhart, Ind., and William G. Magrane, Mishawaka, Ind., discussed "Uses for the Tonsil Snare; Entropion Operation; Paracentesis of Anterior Chamber; Aids in Ear Trimming; Passing the Stomach Tube; Passing the Gastroscope; Applying the Thomas Splint; and Restraint for Grooming."

Drs. Joseph H. Krichel, Keokuk, and Wayne H. Riser, Skokie, Ill.: "Oophorohysterectomy in Estrus."

The ladies were entertained at a luncheon and theater party.

s/WAYNE H. RISER, *Secretary.*

Massachusetts

State Association.—The regular monthly meeting of the Massachusetts Veterinary Association was held at the Hotel Statler, Boston, on Nov. 16, 1949. Dr. Harry G. Hodges, Cornell University, Ithaca, N. Y., discussed "Control of Mastitis." The entire evening was given over to the discussion of this problem in order that any recommendations of their committee on mastitis might be inaugurated by the early part of 1950.

s/C. LAWRENCE BLAKELY, *Secretary.*

Michigan

Koch Glyoxylide Treatment.—Previous analysis of the Koch glyoxylide treatment (JOURNAL, Sept., 1948, pp. 220-223; and Dec., 1948, pp. 561-563), and the plane on which it is being exploited, may be judged from an announcement issued Nov. 1, 1949, by the Christian Medical Research League. Koch Cattle Shots, Inc., has been appointed Michigan distributor of this treatment for livestock.

[The president of the League is "Dr. Sam Swain," and we understand that he is a doctor of divinity. It is not clear from the official announcement whether "cattle shots" provide an outlet for his ecclesiastical training and place glyoxylide in the "faith healing" class, or whether he has deserted his original field of training and invaded that of veterinary medicine.—ED.]

Minnesota

Short Course.—The twenty-sixth annual short course for veterinarians was held at the University Farm, St. Paul, on Oct. 26-27, 1949, with 100 in attendance. The program follows. Speakers not otherwise identified are from the staff of the University of Minnesota Division of Veterinary Medicine.

Dr. J. H. Sautter: "Chemotherapeutic Agents in the Control of Blackhead in Turkeys."

Dr. G. M. Briggs, Division of Poultry Husbandry: "Recent Developments in Poultry Nutrition."

Dr. Frank Thorp, Jr., research professor, School of Veterinary Medicine, Michigan State College, East Lansing: "Nutrition as Related to Enteric Disorders of Swine."

Dr. L. M. Hutchings, Purdue University, Lafayette, Ind.: "Infectious Diseases of Young Pigs."

Dr. G. A. Young, Jr.: "Studies on Losses in Baby Pigs."

Drs. D. C. Innes, Slayton; E. G. Hughes, Sleepy Eye; G. A. Young, Jr., Austin; L. H. Pint, Austin; L. M. Hutchings, Lafayette, Ind.; W. M. Hawkins, Heron Lake; and Frank Thorp, Jr., East Lansing, Mich., participated in a panel discussion: "Diseases of Young Pigs."

Dr. D. E. Bartlett: "Bovine Trichomoniasis."

Dr. M. H. Roepke: "Milk and Cream Ring Test for Brucellosis."

Dr. J. W. Cunkelman, Fort Dodge Laboratories, Fort Dodge, Iowa: "Treatment of Infertility of Cows."

Among the newer techniques and methods of diagnosis and treatment demonstrated were collection of material for diagnosis of bovine trichomoniasis; using the milk and cream ring test; poultry testing and vaccination; and pathologic specimens.

Motion pictures shown at the meeting were "Bovine Coccidiosis," "Lung Worm Infection of Cattle," "Johne's Disease," and "Action of the Heart Valves."

s/H. J. GRIFFITHS, *Resident Secretary.*

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Twin City Society.—The Twin City Veterinary Medical Society met on Oct. 26, 1949, at the University Farm, St. Paul. Speaker of the evening was Mr. Alfred D. Stedman, associate editor, *St. Paul Pioneer Press Dispatch,* who spoke on "Problems Facing the Livestock Industry and the Veterinary Profession." In speaking of the battle against foot-and-mouth disease in Mexico, Mr. Stedman said that the importance of this issue is not generally realized. "The future existence of all our industries depending on mass production of livestock seems to hang on the outcome of that battle. . . The whole outcome for armies of U.S. farmers, meat and dairy workers, and consumers of livestock products hinges on veterinary science winning a victory below the border." Mr. Stedman also mentioned the public health aspects of veterinary medicine and the importance to our present standard of living of maintaining health in our livestock and poultry industries.

s/H. J. GRIFFITHS, *Resident Secretary.*

Missouri

Dr. Quin Talks at USDA Club.—Dr. A. H. Quin, Kansas City, Mo., addressed approximately 100 members of the USDA Club at a dinner-meeting in Kansas City recently. The subject of his talk was "The Relationship of Veterinary Medicine to Agriculture and Human Welfare." Dr. Quin pointed out the accomplishments of the veterinary profession in the past half century, emphasizing the progress made in this country against tick fever, foot-and-mouth disease, bovine tuberculosis, glanders of horses, contagious pleuropneumonia of cattle, and others, and how this has been reflected in the success of the livestock industry and the higher standard of living for millions of Americans. "The greatest savings in the prevention of disease, in the salvage of sick and injured animals," said Dr. Quin, "comes from the day-to-day service of individual veterinary practitioners on individual farms."

Nebraska

State Association.—The fifty-third annual meeting of the Nebraska State Veterinary Medical Association was held Dec. 7-9, 1949, at the Cornhusker Hotel, Lincoln. The scientific program follows.

Dr. J. D. Shoeman, president of Iowa Veterinary Medical Association, Atlantic: "Veterinary Business Management." Dr. D. F. Walker, Broken Bow, led the discussion of Dr. Shoeman's paper.

Dr. W. F. Irwin, Tulsa, Okla.: "Bone Surgery in Small Animals." The ensuing discussion was led by Dr. V. J. Brandt, Scottsbluff.

Dr. J. W. McGinnis, Ord: "Problems in Cattle Practice." Dr. J. L. George, Chester, opened the discussion which followed Dr. McGinnis' presentation.

Dr. J. D. Ray, Omaha, who represented the Nebraska association at the 14th International Veterinary Congress in London: "Summary of 14th International Veterinary Congress."

Dr. Carl J. Norden, Sr., Lincoln, also a representative of the association to the Congress, showed pictures taken in London and on the European tour.

Dr. F. R. Woodring, University of Nebraska, Lincoln: "Newcastle Disease in Chicks from Vaccinated and Nonvaccinated Hens."

Dr. Carl Olson, Jr., University of Nebraska: "Observations on Hyperkeratosis (X Disease)." Dr. E. W. Peck, Auburn, led the discussion of Dr. Olson's paper.

Dr. H. C. H. Kernkamp, University of Minnesota, St. Paul, conducted a round table discussion on "Diseases of Livestock." He was assisted by Drs. T. C. Campbell, Norfolk; F. W. Hansmire, Fairbury; Fred Knapple, Lexington; J. H. Magilton, David City; and C. H. Hoekstra, Omaha.

s/L. I. HINES, *President.*

New Hampshire

Business Meeting.—The annual business meeting of the New Hampshire Veterinary Medical Association was held at the State House in Concord, on Nov. 29, 1949. Officers elected for the coming year were Drs. Wilson Haubrich, Claremont, president; Forrest Tenney, Peterboro, vice-president; and Fred E. Allen, Durham, secretary-treasurer. Members of the Executive Committee are Drs. G. Carroll Cilley, Sr., Concord; F. L. Clark, Nashua; and C. B. Place, Dover.

Speakers were Mr. Perley Fitts, commissioner of agriculture, and Dr. R. W. Smith, state veterinarian. Dr. and Mrs. David Hopkins, Brattleboro, Vt., discussed highlights of their recent European tour in conjunction with the International Veterinary Congress and showed slides taken in various countries which they visited.

s/FRED E. ALLEN, *Secretary.*

New York

Human Glanders.—The *Webster Times-Union* (Nov. 5, 1949) reports a case of human glanders which terminated fatally, "the first seen in New York State in over a generation." The report came to the New York State Association of Public Health Laboratories from Rochester where the case occurred.

A middle-aged man was thought to be suffering from skin tuberculosis. Bacteriologic examinations and animal inoculations of material collected after death of the patient established the diagnosis of glanders. The source of infection was not determined.

s/F. L. STEIN, D.V.M.

Pennsylvania

Dr. Kelser Guest Lecturer at London.—Dr. R. A. Kelser, professor of bacteriology and dean of the faculty of the School of Veterinary Medicine, University of Pennsylvania, departed on Nov. 9, 1949, for a brief trip to Europe where he was guest lecturer at the University of London. He presented three lectures dealing with "Adaptation of Viruses to Different Host Species and Different Tissues," "Foot-and-Mouth Disease with Special Reference to Important Facts and Problems Emphasized by the Current Outbreak in Mexico," and "Rabies and Its Control." While in Europe, Dr. Kelser also addressed a special meeting of the Veterinary Medical Association of Ireland on "Present Status of Veterinary Education in the United States."

s/DONALD G. LEE, *Resident Secretary.*

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Keystone Association.—At the Nov. 30, 1949, meeting of the Keystone Veterinary Medical Association, at the University of Pennsylvania School of Veterinary Medicine, a practitioner's panel discussion was presented on "Internship in Pennsylvania." Members of the panel were Drs. W. C. Glenney, Ardmore; R. S. Detwiler,

Reading; J. V. McCahon, Downingtown; and A. Bachrach, Philadelphia.

s/RAYMOND C. SNYDER, *Secretary.*

Vermont

Dr. Durrell Joins University Staff.—Dr. W. B. Durrell (ONT '42) has joined the staff of the Department of Animal Pathology at the University of Vermont as assistant professor. Dr. Durrell was in general practice for two years after receiving his D.V.M. degree and then accepted a position on the staff of the Ontario Veterinary College. For the past four years, he has been on the faculty of Macdonald College, Hull, Que., where he earned his M.S. degree and did research in the field of bovine sterility. His duties in his new position will be divided between teaching and research.

s/W. D. BOLTON, *Resident Secretary.*

Washington

New Members of Veterinary College Staff.—The following staff members have been added to the State College of Washington School of Veterinary Medicine: Drs. R. A. Kainer (COLO '49) and Arturs Vitums (Riga, Latvia, 1936), Department of Veterinary Anatomy and Histology; W. E. Ribelin (ISC '49) and H. E. Adler (WASH '46), Department of Veterinary Hygiene and Pathology; Nyles Van Hoosen (WASH '43), Virginia Streets (WASH '44), and R. G. Innes (WASH '49), Department of Veterinary Medicine and Surgery.

s/R. E. NICHOLS, *Dean.*

Wisconsin

Milwaukee Association.—A lively discussion followed the showing of the films "Diagnosis of Urologic Conditions" and "Edema—Cardiac and Renal" at the monthly meeting of the Milwaukee Veterinary Medical Association on Nov. 15, 1949.

s/K. G. NICHOLSON, *Secretary.*

• • •

Northeastern Association.—Approximately 35 veterinarians attended the twelfth annual meeting of the Northeastern Wisconsin Veterinary Medical Association at the Conway Hotel in Appleton on Oct. 26, 1949. Mr. Mark Catlin, Jr., spoke on recent state legislation of interest to veterinarians; much of his talk concerned brucellosis. Mr. Nelson Rodgers, research manager for the Western Condensing Company, discussed "Research on Vitamins and Animal Nutrition."

Officers elected at the meeting were Drs. E. J. Meyer, Mishicot, president; H. G. Fehl, Sturgeon Bay, vice-president; William Madson, Appleton, secretary; and H. R. Trombley, Appleton, treasurer.

s/WILLIAM MADSON, *Secretary.*

Wyoming

Dr. Lindenstruth to Head Department.—Dr. Robert W. Lindenstruth (ISC '41), since 1947 assistant professor of the Department of Veterinary Science and Bacteriology at the University of Wyoming, Laramie, has been named head of the department to replace Dr. A. M. Lee, who resigned to accept a post with the U.S. Bureau of Animal Industry in Washington, D.C.

Dr. Lindenstruth, who has been acting head of the department during 1948 and 1949 while Dr. Lee was on leave of absence, served from 1941 to 1945 in the Veterinary Corps of the U.S. Army, and was an employee of the Missouri State Department of Health from 1945 to 1947.

s/J. A. HILL, *Dean,*
College of Agriculture.

FOREIGN NEWS

China

Rinderpest Vaccination.—Nothing conceivable could offer more to the future of China than the vaccine for the prevention of rinderpest developed by the Canadian-United States veterinarians on a St. Lawrence River island during the war, for, rinderpest—African Dutch for "cattle plague"—lives up to its name in the Orient. Being deadly to the water buffalo, the rice farmer's sole farm power, it causes starvation of millions of people through the years. Scarcely 1 per cent of water buffaloes survive an attack. As a prominent science journal points out, here is a single disease of a farm animal emphasizing the importance of veterinary research. By stopping rice culture single handed, rinderpest has been the sole cause

—*Courtesy of Science News Letter*

Vaccinating water buffaloes against rinderpest in China.

of appalling famines and besides renders unprofitable the raising of cattle in vast regions of the world.

The *FAO Bulletin* for May-June points out that rinderpest is the most deadly of cattle diseases, killing more than 2 million head annually in Asian and African cattle-raising regions, and adds that its eradication is in sight owing to the vaccine now

available. The Food and Agricultural Organization bulletin gives full information in English and French on the use of the vaccine.

Israel

Human Q Fever Diagnosed.—The ubiquitous distribution of Q fever throughout the world was indicated by the diagnosis of a human case in this new state. The Rickettsia, *Coxiella burneti*, was isolated from the blood of the patient and maintained by guinea pigs and egg embryos through serial passages. The source of the infection was not given.—*From Refuah Vet. July*, 1949.

VETERINARY MILITARY SERVICE

Colonel Hartman Appointed to European Post.—The new chief of the veterinary branch of the European Command Medical Division, Col. Jacob Hartman (UP '17) of Philadelphia, Pa., is a second-generation veterinarian who began his army career in 1917, when the care of cavalry horses and pack animals formed the major portion of a veterinarian's duties. Colonel Hartman commented that today an army veterinarian's time is spent largely on food inspections. In Germany, he will tour the food runs which bring fresh milk, butter, eggs, and produce from Denmark, Sweden, Holland, Belgium, and other European countries to U.S. installations in Germany. He will also attend the army horses and dogs with the constabulary units and EUCOM military police.

U.S. Army Photo

Col. Harold E. Egan

Colonel Hartman succeeds Col. H. F. Egan (OSU '11) who has retired after more than thirty years with the Veterinary Corps of the U.S. Army. Colonel Egan joined the Army as second lieutenant shortly after receiving his D.V.M. degree. After serving in World War I, he became instructor at the Field Artillery School at Ft. Sill, Okla. Later, he was appointed director of the Army Veterinary school at the Army Medical Center, Washington, D.C. to Colonel Egan was awarded the Legion of Merit for his work as chief veterinarian of the Seventh Service Command, Ft. Omaha, Neb. He completed three years in the European Command before his retirement.

Colonel Hartman has served with the Fifth Cavalry Regiment at Ft. Bliss, Texas; the veterinary laboratory, Army Medical School, Washington, D.C.; Carlisle Barracks, Pa., and in the Philippines, during World War I. During World War II, he was traveling consultant for The Surgeon General on veterinary activities at army camps and food procurement establishments throughout the United States.

U.S. Army Photo

Col. Jacob Hartman

Colonel and Mrs. Hartman will live in Heidelberg.

• • •

General Grow Retires.—Major General Malcolm C. Grow, Surgeon General of the U.S. Air Force, retired on Nov. 30, 1949, after more than thirty-one years of military medical service. He was succeeded by Major General Harry G. Armstrong, formerly deputy surgeon general; Brigadier General Dan Clark Ogle, former special assistant to The Surgeon General, became deputy surgeon general.

General Armstrong is a fellow of the American Medical Association, the Aero-Medical Association, the Institute of Aeronautical Sciences, the American College of Physicians, and the Royal Society of London, England. He is rated as a flight surgeon and has been awarded the Legion of Merit with one Oak Leaf Cluster, the Order of the British Empire, and the French and Belgian Croix de Guerre with Palms.

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Transfer of Officers to Air Force Medical Service Reserve.—Interdepartment transfer of military personnel has been extended until July 25, 1950. Reserve veterinary officers who wish to transfer to the Air Force may submit appli-

cations to the Adjutant General, Department of the Army, through Reserve channels.

Additional information may be obtained from: Office of The Surgeon General, Headquarters United States Air Force, Washington 25, D.C., Attention: Chief, Veterinary Division.

Army Veterinary Corps officers who have been transferred to the Air Force Veterinary Service are:

COLONELS

Cowherd, Charles M.*
Kester, Wayne O.*
Hodgson, Earnest E.*
Barta, James C.

LIEUTENANT COLONELS

Hock, Loz A.
Leach, Benjamin F.*
Karr, James R.*
Hoon, Henry R.
Rushmore, Rowland W.*
Jurden, Richard H.
Lukens, William A.

MAJORS

Scott, Rolland O.*
Gorman, Harry A.*
Orr, Norton A.
VanSant, Willard M.*
Bills, William E.*
McIntyre, James C.*
Madison, Russel M.*
Day, Robert W.*
Robinson, Charles E.*
Gale, John*
Nettles, John R.*
English, Burt W.*
Snodgrass, William B.*
Stephens, Seidel M.*
Clark, Marley C.*
Snider, Charles H.*
Wilder, Claude O.*
Huber, Samuel F.
Beckcom, Edwin A.*
Kadets, Martin*
Berger, Joseph H.*
Couch, J. B.
Cook, Victor J.
Bixby, John Snell
Burkey, Fred M.
Lasher, Norbert A.*
Walters, Ralph D.*
Miller, Robert R.*
Strickland, Robert J.
MacEachern, Neil G.*
Thomas, George O.
Phifer, William G.
Nettles, William D.*
Sasmore, Daniel P.*
Hummer, Robert L.*
Gorman, Lester J.*
Beadner, Harold F.*
Nelson, Robert K.
Wempe, Lillis R.
Bridges, Buford F.
Christopher, Burton C.*
Kyner, Roy E.
Weil, Frederick

CAPTAINS

Cunningham, George W.
Hempy, Jack H.*
Beckenhauer, Neil D.*
Nichol, Wilbert C.
Wendell, Carl E.
Stevens, Earl H.
Valentine, Harold D.
Mynatt, Vernon S.
Wernz, Omar G.
Dalziel, George T.
Vara, Joseph J.
Kuhn, Ulysses S. G., Jr.*
Armstrong, James
Neurater, Lloyd J.*
Fremmine, Benjamin D.*
Downs, Alexander, Jr.
Wilson, William H.
Reed, Ernest L.
Rader, William A.*
Hornickel, Edward P.

FIRST LIEUTENANTS

Rosenberg, Donald W.
Buckwalter, Robert C.
Moore, John F.

SECOND LIEUTENANT

Farrell, Don B.

*Regular Air Force

DEATHS

Charles H. Adams (ONT '93), 83, Ann Arbor, Mich., died on June 3, 1949. Dr. Adams practiced at Carson City and Mount Clemens, Mich., before coming to Ann Arbor.

J. A. Ambrosy (SAN FRAN '12), Shawnee, Okla., died on Sept. 21, 1949. A native of Austria and a graduate of the Royal Veterinary College (Vienna, 1889), Dr. Ambrosy served as a veterinarian with the Austrian army until he came to the United States in 1893. He has practiced in Shawnee since 1914. Dr. Ambrosy is survived by his wife.

Thomas J. Cooper (ONT '97), Paterson, N. J. died on Oct. 10, 1949. Dr. Cooper practiced in Lockport, N.Y., until about 1900, when he came to Paterson. For more than fifteen years, he served as meat inspector on the city board of health. More than forty years ago, when the automobile began to replace horse-drawn vehicles, Dr. Cooper patented a puncture resistant, skidproof tire, but was unable to interest large tire producers in it.

John M. Egan (SAN FRAN '12), Napa, Calif., died July 27, 1949. Dr. Egan had been a member of the AVMA.

Charles A. Greenig (UP '18), 56, Atlanta, Ga., died Sept. 23, 1949, after an illness of six weeks. He joined the U.S. Bureau of Animal Industry in 1920 and served for twenty-seven years in North Carolina, Ohio, Missouri, and Georgia. Dr. Greenig was a member of the Georgia State Veterinary Medical Association, and was also a Mason and a Shriner. He is survived by his widow, one daughter and a son, Charles A., III, who is studying veterinary medicine at the University of Georgia. Dr. Greenig had been a member of the AVMA.

C. H. Grunert, Edmonton, Alberta, a graduate of the Royal Veterinary College, Dresden, Saxony, Germany (1908), died recently. Dr. Grunert had been in general practice.

C. Harold Holmes (ONT '24), 50, Lexington, Ky., died Oct. 17, 1949. Dr. Holmes had been in large animal practice in Lexington for twenty-four years. He has been associated with the Keeneland Race Course for several years, serving as a paddock judge and also as a veterinarian. He was a veteran of World War I and was awarded the Croix de Guèrre by the French government for gallantry in action while serving in France. Dr. Holmes is a past president of the Central Kentucky Veterinary Medical Association, Kentucky Veterinary Medical Association, and was a member of the AVMA. He is survived by his widow, two sons, and one daughter.

Edwin M. Hendy (ONT '95), Jefferson City, Mo., died July 3, 1949.

M. R. Higbee (MC K '11), 89, Albert Lea, Minn., died July 3, 1949. Dr. Higbee had practiced in Albert Lea for more than thirty years. He was a past president of the Minnesota State Veterinary Medical Association.

L. F. Koonce (KCVC '09), 68, Raleigh, N. Car., died on Sept. 29, 1949. Dr. Koonce, oldest veterinarian in point of service in Raleigh, served for a number of years as milk and meat inspector and was instrumental in standardizing sanitary milk production. He served as professor of animal husbandry at North Carolina State University for several years and was active in state and national veterinary associations. He had been a member of the AVMA.

W. A. Plummer (ST JOS '18), Laverne, Okla., died early in October, 1949. Dr. Plummer had been a member of the AVMA.

Earl C. Walker (ONT '18), 53, Fargo, N. Dak., died June 25, 1949. Dr. Walker was a member of the North Dakota State Veterinary Medical Association and had been a member of the AVMA.

*Indicates members of the AVMA.

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An' Related Topics

WATCH YOUR ENGLISH AND OURS

CAPITALIZING

1) When the all-capital letters of the ancient alphabets (A, B, C, D, etc.) were replaced in part by lower-case letters (a, b, c, d, etc.), capitals or upper-case letters were retained for the first letter of proper names and other places. The change created the usage called capitalizing.

2) In too much of our literature, the ungrammatical habit of capitalizing common nouns as a sort of emphasis is a regrettable error. To illustrate, although the names of drugs are common nouns, from the latest edition of a textbook widely used in veterinary colleges, we quote:

Aluminum Silicate, Aluminum chloride, Glucose Solution, Sex Hormones, among many others.

The current issue of an 8-page bulletin published by a state association gives its reader this dose of miscapitalized names of diseases:

Nervous Acetonemia, Milk Fever, Anthrax, Foot-and-Mouth Disease, Tuberculosis, Leptospirosis, *et al.*

Should these two sets of examples of false capitalizing not be convincing, note the following examples lifted from another regular periodical:

Medical School, College Faculty, Metropolitan area, Purebred, Veterinarian, X-ray, and X-Rays.

The capitalized common nouns that creep into printed matter make up an unbelievable comedy of errors. If this column removes only this illiteracy, its purpose will have been well served.

3) The reader will bear in mind that the names of diseases in apposition to proper names remain common nouns. Only the eponymic word takes a capital as in:

Texas fever, not Texas Fever.
Weil's disease, not Weil's Disease.
African horse sickness, not African Horse Sickness, etc., etc.

By inviting the capitalizing of the modified common nouns, this group of diseases tends to play tricks on even the careful writers and publishers in our field.

Nothing could be more deceptive to writ-

(Continued on page 28)

COMING MEETINGS

Notices of Coming Meetings must be received by 8th of month preceding date of issue

Pennsylvania, University of, Annual conference for veterinarians. Jan. 3-4, 1950. R. A. Kelser, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., dean.

New York State Veterinary College. Annual conference for veterinarians. Jan. 4-6, 1950. W. A. Hagan, Cornell University, Ithaca, N. Y., dean.

Arizona Veterinary Medical Association. Annual meeting. Hotel Adams, Phoenix, Ariz., Jan. 5-6, 1950. Robert E. McComb, Jr., 21 W. Alta Vista Rd., Phoenix, Ariz., resident secretary.

Oklahoma Veterinary Medical Association. Annual meeting. Skirvin Tower Hotel, Oklahoma City, Okla., Jan. 9-10, 1950. Lewis H. Moe, Stillwater, Okla., secretary.

California State Veterinary Medical Association. Annual midwinter conference. San Luis Obispo, Calif., Jan. 9-11, 1950. Charles S. Travers, 16th and Mission Sts., San Francisco, Calif., executive secretary.

Wisconsin Veterinary Medical Association. Annual meeting. Schroeder Hotel, Milwaukee, Wis., Jan. 12-13, 1949. K. G. Nicholson, 2136 N. Farwell Ave., Milwaukee, Wis., secretary.

Ontario Veterinary Association. Annual meeting. Chateau Laurier, Ottawa, Ont., Jan. 12-14, 1950. T. Lloyd Jones, Ontario Veterinary College, Guelph, Ont., resident secretary.

Indiana Veterinary Medical Association. Annual meeting. Severin Hotel, Indianapolis, Ind., Jan. 12-14, 1950. W. W. Garverick, Zionsville, Ind., secretary.

Tri-State (Arkansas, Mississippi, Tennessee) Veterinary Conference. Peabody Hotel, Memphis, Tenn., Jan. 16-17, 1950. H. W. Nance, Lawrenceburg, Tenn., secretary.

Intermountain Veterinary Medical Association. Annual meeting. Newhouse Hotel, Salt Lake City, Utah, Jan. 16-18, 1950. M. L. Miner, Utah State Agricultural College, Logan, Utah, secretary.

Minnesota State Veterinary Medical Society. Annual meeting. Hotel St. Paul, St. Paul, Minn., Jan. 16-18, 1950. H. C. H. Kernkamp, University Farm, St. Paul 1, Minn., secretary.

South Carolina Association of Veterinarians. Annual business meeting. Jefferson Hotel, Columbia, S. Car., Tuesday evening, Jan. 17, 1950. R. A. Mays, Columbia, S. Car., secretary.

Iowa Veterinary Medical Association. Annual meeting. Fort Des Moines Hotel, Des Moines, Iowa, Jan. 17-19, 1950. F. B. Young, Waukee, Iowa, secretary.

(Continued on page 28)

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(Continued from page 26)

ers than the brief conventional rules on the use of capitals. The orthodox directions are to capitalize (1) the names of persons and places; (2) the beginning of each sentence and line of verse; (3) the pronoun I and the interjection O; and (4) names referring to the Deity. Nothing much is ever told the pupil about all the complications to which these simple directions lead. Thus, the grown-up is left in a state of confusion that keeps tormenting the writers, editors, and publishers of the best printed material, and makes it necessary for them to adopt a consistent style of their own. The installments to follow will give the style of capitalizing adopted by the AVMA, and its suitability for veterinary writing in general.

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(Continued from page 26)

Louisiana State Veterinary Medical Association. Annual meeting. Agriculture Center Bldg., Louisiana State University campus, Baton Rouge, La., Jan. 18-19, 1950. R. B. Lank, Louisiana State University, Baton Rouge, La., secretary.

Texas, State Veterinary Medical Association of. Annual meeting. Galvez Hotel, Galveston, Texas, Jan. 23-24, 1950. E. A. Grist, 208 S. Castell Ave., New Braunfels, secretary.

North Carolina State College of Agriculture. Annual veterinary conference. State College of Agriculture, Raleigh, Jan. 24-27, 1950. C. D. Grinnells, State College of Agriculture, Raleigh, N. Car., chairman.

Michigan State College, School of Veterinary Medicine. Annual postgraduate conference for veterinarians. Michigan State College, Jan. 25-26, 1950. C. S. Bryan, Michigan State College, East Lansing, Mich., dean.

Virginia State Veterinary Medical Association. Winter meeting. Hotel Jefferson, Richmond, Va., Jan. 30-Feb. 1, 1950. Harry K. Royer, 1404 Main St., Lynchburg, Va., secretary.

Kansas Veterinary Medical Association. Annual meeting. Jayhawk Hotel, Topeka, Kan., Jan. 30-Feb. 1, 1950. Olin W. Morris, 204 N. 32nd St., Parsons, Kan., secretary.

Illinois State Veterinary Medical Association. Annual meeting. Pere Marquette Hotel, Peoria, Ill., Feb. 1-3, 1950. A. G. Misener, 6448 Clark St., Chicago 26, Ill., secretary.

New Jersey, Veterinary Medical Association of. Annual meeting. Hotel Hildebrecht, Trenton, N. J., Feb. 2-3, 1950. J. R. Porteus, Box 938, Trenton, N J., secretary.

American Animal Hospital Association. Annual meeting. Shirley Savoy Hotel, Denver, Colo., April 24-27, 1950. W. H. Riser, 5335 Touhy Ave., Skokie, Ill., executive secretary.

Alabama Polytechnic Institute, twenty-sixth annual conference for veterinarians. Alabama Polytechnic Institute, Auburn, Ala., June 8-10, 1950. R. S. Sugg, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala., dean.

Wisconsin Postgraduate Conference for Veterinarians. University of Wisconsin College of Agriculture, Madison, Wis., June 21-22, 1950. C. A. Brandly, University of Wisconsin College of Agriculture, Madison 6, Wis., chairman.

Northwest Veterinary Medical Conference. Annual meeting. Winthrop Hotel, Tacoma, Wash., July 17-19, 1950. J. L. Ellis, 2022 E. 4th St., Olympia, Wash., secretary.

United States Livestock Sanitary Association. Annual meeting. Westward-Ho Hotel, Phoenix, Ariz., Nov. 1-3, 1950. Dr. R. A. Hendershott, 1 West State St., Trenton, N.J., secretary.

(Continued on page 30)

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(Continued from page 28)

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. Russell P. Cope, 1205 San Pablo Ave., Berkeley 6, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Thomas Eville, Route 1, Box 136H, Fresno, Calif., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. O. A. Soave, 5666 Telegraph, Oakland, Calif., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Greater St. Louis Veterinary Medical Association. Ralston-Purina Research Building, St. Louis, Mo., the first Friday in February, April, June, and November. W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Wednesday of even-numbered months. R. A. Case, 400 S. Garden St., Peoria, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, the third Tuesday of each month. R. S. Wann, Wingate, Ind., secretary.

Jefferson County Veterinary Society, Louisville, Ky., the first Wednesday evening of each month. F. M. Kearns, 3622 Frankfort Ave., Louisville 7, Ky., secretary.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., the fourth Wednesday of each month. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. C. L. Blakely, Angell Memorial Animal Hospital, 180 Longwood Ave., Boston, Mass., secretary-treasurer.

Michiana Veterinary Medical Association. Hotel Elkhart, Elkhart, Ind., 7:00 p.m., the second Thursday of each month. R. W. Worley, 3224 Lincoln Way West, South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

(Continued on page 32)

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(Continued from page 30)

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. C. Edward Taylor, 2146 South Broad St., San Luis Obispo, Calif., secretary.

New York City Veterinary Medical Association. Hotel Statler, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. I. N. Bohlender, Box 588, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. James R. Ketchersid, 666 East Highland Avenue, San Bernardino, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. E. W. Paul, Box 866, Redwood City, Calif., secretary.

Redwood Empire Veterinary Medical Association, the second Tuesday of every other month. Charles D. Stafford, Novato, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the fourth Friday of each month. R. C. Goulding, 11511 Capitol Avenue, Sacramento, Calif., secretary.

(Continued on page 42)

Notice to Contributors

Journal of the AVMA

and the

American Journal of Veterinary Research

Exclusive Publication.—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals.

Manuscripts.—Manuscripts must be typewritten, double-spaced, and the original, not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones. Footnotes and bibliographies also should be typed double space and should be prepared in the following style: name of author, title of article, name of periodical with volume, month (day of month, if weekly), and year.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the Journals with a minimum of reduction. Photomicrographs which cannot be reduced should be marked for cropping to 1-column or 2-column width. Drawings should be made clearly and accurately in India ink on white paper. Figures appearing on graphs or charts should be large enough to allow for reduction necessary for the chart or graph to fit on Journal pages. All illustrations should bear the name of the author on the back.

Tables.—Tables should be simple. Complex tables are not conductive to perusal. It is wiser to summarize complex material rather than to attempt to tabulate it.

News.—Secretaries of associations and readers are requested to send us announcements of meetings and news items.

Anonymous Letters.—Anonymous communications, of whatever nature or purpose, to the JOURNAL or to the Association will not be published or referred for consideration to any Association official or committee.

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(*Continued on page 36*)

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(Continued from page 34)

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(Continued on page 38)

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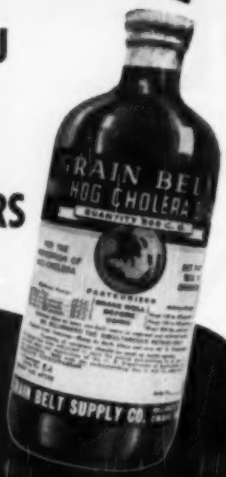

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(*Continued from page 36*)

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(*Continued on page 40*)

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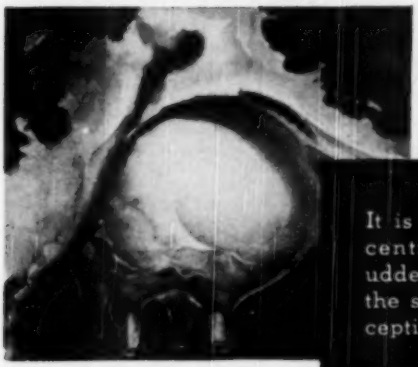

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(Continued from page 38)

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Veterinary Division

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(Continued from page 32)

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. R. J. McFarland, 3621 Jewell St., San Diego 9, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. D. H. McDole, 8674 Melrose Ave., Los Angeles 46, secretary.

South Florida Veterinary Society, the third Tuesday of each month, 8:00 p.m., at the Peckway Skeet Club. Robert P. Knowles, 2936 N.W. 17th Ave., Miami, Fla., secretary.

FAO Fifth Annual Conference

The fifth annual conference of the Food and Agriculture Organization was held on Nov. 21, 1949, in Washington, D. C. Major matters to come before the Council were world review and outlook, commodity problems, international investment and financing facilities, the program of FAO and the technical programs of governments, technical assistance for economic development, and the site of FAO headquarters.

Members of the FAO Council are: Australia, Brazil, Canada, Chile, China, Cuba, Czechoslovakia, Denmark, Egypt, France, India, Italy, Mexico, the Netherlands, the Philippine Republic, Union of South Africa, the United Kingdom, and the United States of America.

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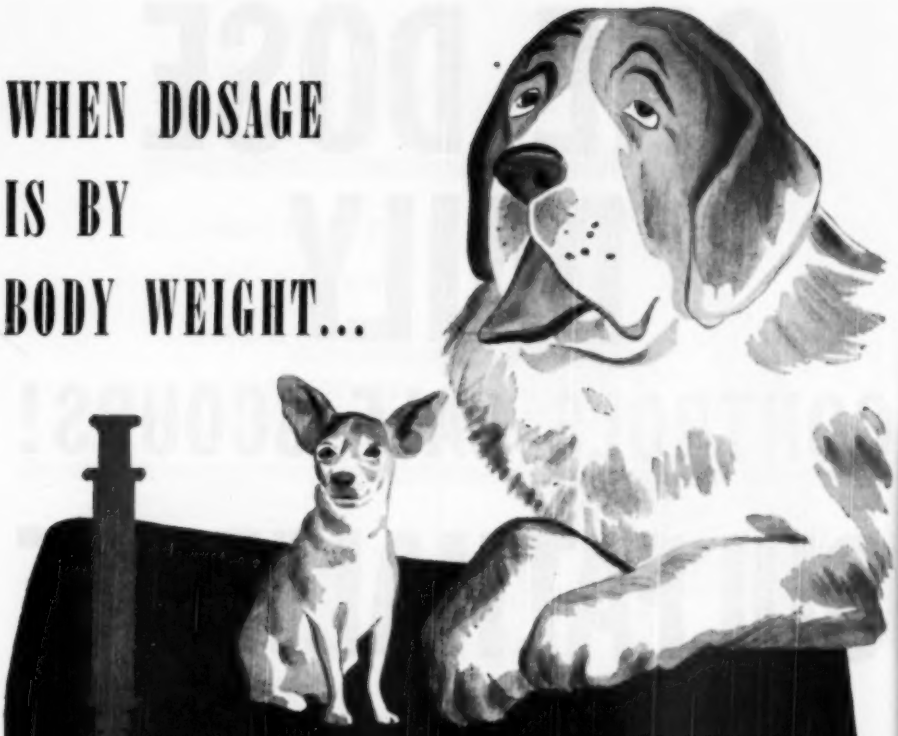

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It is desirable that these dog owners pay a return visit after 5 days to satisfy themselves that immunization has occurred.

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1. J. Am. Vet. M.A. *104*:274, May 1944. 2. Cornell Vet. *31*:170, April 1946. 3. N. Am. Vet. *30*:581, Sept. 1949. 4. J. Am. Vet. M.A. *115*:261, October 1949. 5. J. Am. Vet. M.A. *106*:7, Jan. 1945. 6. J. Am. Vet. M.A. *107*:238, Oct. 1945. 7. N. Am. Vet. *27*:564, Sept. 1946. 8. Vet. Med. *42*:170, May 1947. 9. J. Am. Vet. M.A. *108*:89, Feb. 1946.

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REFERENCES: [1]Schoening, H. W., Osten, O. L., Legenhausen, D. H., Anderson, W. A., and Hall, W. J.: Vaccination Against Disease with Formalin-Inactivated, Commercially Produced Vaccines. Am. J. Vet. Research, 10, (1949): 176-182. [2]Brandly, C. A., Moses, H. E., Jones, E. Elizabeth, and Jungherr, E. L.: Immunization of Chickens Against Newcastle Disease. Am. J. Vet. Research, 7, (1946): 307-322. [3]Coronel, A. R.: Adsorbate Newcastle Disease (Avian Pest) Vaccine. Am. J. Vet. Research, 8, (1947): 120-127. [4]Schoening, H. W., and Thompson, C. H.: Epizootologie de la Maladie de Newcastle aux Etats Unis, Office Int. des Epizooties, 31, (1949): 112-121.

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